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ESSAY FOR GOLD MEDAL COMPETITION.

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SUBJECT:—

"LESSONS TO BE DERIVED FROM THE OPERATIONS OF LANDING AN EXPEDITIONARY FORCE ON AN ENEMY'S COAST IN PAST WARS, WITH SPECIAL REFERENCES TO SIMILAR OPERATIONS ON THE PART OF OUR ARMY IN THE FUTURE."

"Fronte capillata est, post est occasio calva."

By Captain JOHN M. ROSE, R.M.A.

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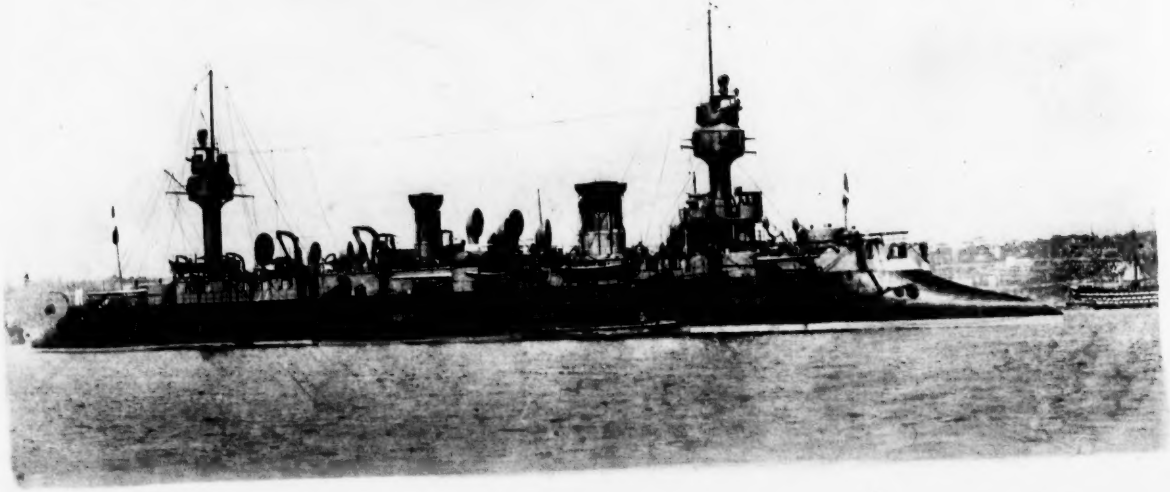

For Particulars, see Naval Notes, page 748.

For Particulars, see Naval Notes, page 748.

LANDING OF EXPEDITIONARY FORCES.

I.—INTRODUCTION.

IN bequeathing to our keeping a vast empire, our military predecessors have also handed down a wealth of war experience for our guidance; and the study of their actions shows that, though many of their methods are obsolete, yet we can only by great efforts in the future hope to equal their achievements. We have much to learn, not only from their successes, but also from their failures. Some of these lessons are here about to be enumerated under the headings of Strategy, Tactics, and Organisation.

Appended to this essay is a table noting most of the *operations of landing an expeditionary force on an enemy's coast*, engaged in by Great Britain during the last century and a half; and also others occurring in the period, which are of general interest. The table is history in a concentrated form, as references are given to books which give the details of the events referred to; it has no great claim to accuracy, is probably far from complete, and includes many events which are of little military value, but is merely arranged to give material for examination and study. It shows, to commence with, an enormous difficulty under which our military administration labours, in that, under the heading of *place*, are mentioned lands and seas in every continent, and almost in every part of these continents; and the heading of *objectives* introduces matter so varied, that it seems impossible for any British Government to prepare for the next contingency.

Yet to be ready — ready in the very highest sense that can be given to the word—is the great lesson of the past. The first military duty of peace is to prepare everything which may aid the rugged steps of war, to ensure that the commencement, at least, may be smooth, and that ghastly ill-favoured disorder shall not paralyse the first preparations—such disorder as virtually ruined the French Army for the campaign of 1870.

The lesson of the Franco-German War has not been neglected; and now Continental Powers have so laid their plans and carried forward their preparations, that all is ready mapped out for every day's work of mobilisation, until the concentrated force of the nation is ready to strike, or show front to every antagonistic combination of their neighbours. We are trying too; but for us the question is not so simple. For a passive defence all can certainly be done, but such a defence is neither sound strategy, consistent with our past, nor equal to the preservation of that vast empire of which Britain is only the almost insignificant centre. The proper field of action for our regular forces, in the future as in the past, is *over seas*, to act in conjunction with our sea power in preserving distant dependencies, protecting our commercial markets, and, should the stern

necessity arise, to carry war into the enemy's country, that its cruel sights may be kept far away from our peace-loving citizens. Only one thing is necessary to make this programme always possible, and that is, an undisputed command of the sea. That this is vital to us is generally conceded, and needs no further comment here; it is of the essence of the operations to be discussed. The point now to be considered is, to place our Army in a high state of preparation to strike on the offensive. But against whom? Where? And how? As the table shows, these are not easy questions to answer, though a careful study shows that the examples may be divided into certain heads, admitting of classification; and for each class a certain amount of preparation may be made. Again, many of the steps to be taken will be common to all.

The Naval Expedition.

In the first place, there is a very large class carried out by the Navy, perhaps supplemented by troops from the garrisons on the station. These are expeditions against small islands and posts, whose possession depends almost entirely on the command of the sea. At least eighty of the examples in the table fall under this head. The numerous conquests of islands in our long wars have, as a rule, been accomplished by sea power alone. The enemy's Navy has either been driven off the sea, or held severely in check by our own, so that the garrison attacked has been entirely cut off from hope of reinforcements, and has been induced to yield after a very slight resistance.

It is to expeditions of this kind that we owe most of our Colonial possessions acquired previous to 1815, for in that year Australia, as a Colony, had practically no existence; and that part of America, now known as the United States, a true Colony, had passed from our hands for some thirty-five years. Some of these colonies, of course, had only been obtained after serious and protracted military expeditions, affording valuable matter for consideration; and the other operations, though of short duration, are often valuable from a tactical point of view, while the whole give food for strategic thought.

Under this head must be placed the small *cutting-out* expeditions of the Navy, where men were landed to silence batteries and capture forts, and those captures of posts made merely with a view to the destruction of their defences, or to be handed over to such allied garrisons, as were the Spanish guerillas in the Peninsular War, and the Neapolitans on the coast of Italy. Although it must be remembered that on most of these occasions the glory was shared by soldiers, either in the shape of marines or a detachment of infantry (and perhaps artillery), embarked to serve as marines; and all these can claim to be *expeditionary forces landed on an enemy's coast*, though, of course, only of a minor stamp.

Under the same category come such small expeditions for punishing savage tribes as that against Fodi Silah in the beginning of this year; but more important wars against savages, such as the Zulu Campaign, require separate attention, especially when they involve a long march into the interior of a country with a trying climate, as is usually the case.

A mere bombardment of a fortress from the sea is almost outside the limits of the subject, and, as will be explained in the technical portion of the work, these will probably be much rarer in the future.

The "Minor Expedition."

This leaves to be considered only the "Minor Expedition" and the "Serious Invasion of the Territory of Civilised Power." It would seem, for practical value, that it is to the "Minor Expedition" that most of our attention should be devoted, for it is to it that we most frequently have had recourse latterly. By the expression "Minor Expedition" is intended such operations as involve the sea transport, landing, etc., of forces from about the strength of a division to that of an army corps, including operations against semi-civilised foes; operations in aid of allies; the capture of an island or colony offering organised resistance; the land operations of the siege of a defended port, harbour, or dock-yard, of secondary importance, etc., such as the Egyptian Campaigns of 1882, 1884, and 1885; most of the Peninsular War; the attacks on Cape Breton Island in 1745 and 1757-8, with the sieges of Louisburg; the different conquests of Minorca; and other expeditions of about the same calibre, numbering, according to the table, some seventy enterprises.

"Serious Invasion."

There is thus left, to form a last class, all expeditions of a larger and more complicated nature, involving a struggle with a powerful nation, such as Napoleon's contemplated invasion of England, the Peninsular War as a whole, possibly the campaign of Waterloo, the invasion of the Crimea, McClellan's invasion of the York Town Peninsula, etc. Although this class is necessarily the most important, from the greater interests at stake, yet it will be found in the main that it only involves on a bigger scale principles enumerated in the discussion of previously-mentioned cases, and is of less importance, in the sense that such campaigns will probably be more rarely undertaken in the future by our Army, owing to its numerical inferiority as compared with those of the other great Powers, and the vast strain which it must put on a military system already sufficiently taxed by the passive guarding of the empire. However, it must be emphatically recognised that our only chance of maintaining our place among the nations is to be prepared at any time to engage in such an enterprise. Our Navy will do much to secure our position—is, indeed, one of the essentials to the operation discussed—yet of itself alone is not enough to deal the death-blow which shall complete a successful war. The Navy can act as the fire-preparation of the attack, yet requires the assault to be driven home for a successful offensive. Moreover, the only *true defensive* is that which looks forward to the offensive as its termination. Merely to retain peace we must be prepared to bite, and to bite seriously. A simple showing of teeth, without the ability to inflict a wound, is merely indicative of helpless and useless senility!

Table of Expeditions, 1744 *to* 1770.

No.	Date.	Place.	By whom undertaken.	Against whom.	Object, etc.	Object attained.
1	March, 1744	English Channel	French	English	Invasion of England	No
2	1745	Scotland	Pretender	George II.	Conquest of England	,,
3	,,	North America	Colonial forces of New England	French	Capture of Cape Breton Island (1)	Yes
4	,,	India	English	,,	,, Pondicherry	No
5	1746	English Channel	,,	,,	Destroy stores at Lorient	,,
6	,,	India	French	English	Capture of Madras	Yes
7	1748	,,	English	French	,, Pondicherry (2)	No

SEVEN YEA

8	1756	Mediterranean	French	English	Capture of Minorca (1)	Yes
9	1757	India	English	French	,, Chandernagore (1)	,,
10	,,	North America	,,	,,	,, Cape Breton Island (2)	No
11	1758	,, ,,	,,	,,	,, ,, ,, (3)	Yes
12	June-July, 1758	English Channel	,,	,,	First expedition to Cherbourg	In part
13	July-Sept., ,,	,, ,,	,,	,,	Second ,, ,,	Yes
14	May-June, ,,	India	French	English	Capture of Fort St. David	,,
15	1759	English Channel	,,	,,	Invasion of England	No
16	,,	North America	English	French	Capture of Quebec	Yes
17	,,	West Indies	,,	,,	,, Guadaloupe	,,
18	,,	Africa	,,	,,	,, Goree	,,
19	1760	North America	,,	,,	,, Montreal	,,
20	1761	India	,,	,,	,, Pondicherry (3)	,,
21	,,	English Channel	,,	,,	,, Isle of Belleisle	,,
22	,,	West Indies	,,	,,	,, Martinique (1), Grenada (1), Sta. Lucia (1), and St. Vincent (1)	,,
23	1762	,,	,,	Spain	,, Havana (1)	,,
24	,,	Portugal	,,	,,	To aid Portuguese	,,
25	,,	Asia	,,	,,	Capture of Manila	,,
26	1764	Mediterranean	French	Sardinians	Occupation of Corsica	,,
27	1770	Portland Isles	Spanish	English	Attack on Port Ferrol	No

Table of Expeditions, 1776 *to* 1783.

(II.) WARS OF AMERI

28	1776	North America	British	Americans	Capture of Charleston (1)	No
29	1777	,, ,,	,,	,,	Expedition against Philadelphia	Yes
30	September, 1778	West Indies	French	English	Capture of Dominica (1)	,,
31	1778	,, ,,	English	French	,, Sta. Lucia (2)	,,
32	,,	Hindostan	,,	,,	,, Chandernagore (2)	,,
33	,,	,,	,,	,,	,, Pondicherry (4)	,,
34	June, 1779	West Indies	French	English	,, St. Vincent (2)	,,
35	,, ,,	,, ,,	,,	,,	,, Grenada (2)	,,
36	January, 1779	North America	English	Americans	Expedition to Georgia	Temp.
37	1779	English Channel	French & Spanish	English	Invasion of England	No
38	,,	Mediterranean	,, ,,	,,	Capture of Gibraltar	,,
39	1780	North America	English	Americans	,, Charleston (2)	Yes
40	March, 1780	West Indies	French	English	,, Sta. Lucia (3)	No
41	December, 1780	,, ,,	English	Dutch	,, St. Eustatius and St. Martin	Yes
42	April, 1781	,, ,,	,,	French	Blockade of Port Royal	No
43	Later ,,	,, ,,	French	English	Capture of Sta. Lucia (4)	,,
44	,,	,, ,,	,,	,,	,, Tobago (1)	Yes
45	Jan.-Oct., 1781	North America	English	Americans	Expedition to Virginia, York Tn. Peninsula (1)	No
46	1781-82	Mediterranean	French	English	Capture of Minorca (2)	Yes
47	1781	Africa	English	Dutch	,, Cape of Good Hope (1)	No
48	,,	West Indies	French	English	,, St. Eustatius (2)	Yes
49	,,	,, ,,	,,	,,	,, Barbadoes	No
50	1781-82	,, ,,	,,	,,	,, S. Kitts'	Yes
51	1782	,, ,,	French & Spanish	,,	,, Jamaica	No
52	January, 1782	Hindostan	English	Dutch	,, Trincomalee (1)	Yes
53	March ,,	,,	French	English	,, Caddalore (1)	,,
54	August ,,	,,	,,	,,	,, Trincomalee (2)	,,
55	1783	,,	English	Sultan	Expedition to Malabar Coast	,,
56	,,	,,	,,	French	Capture of Cuddalore (2)	No

Table of Expeditions, 1793 *to* 1801.

(III.) WARS OF THE FIRST

57	1793	East Indies	English	French Republic	Capture of Pondicherry (5), Mahé, etc.	Yes
58	,,	North America	,,	,, ,,	,, St. Pierre and Miquelon	,,
59	,,	France	,,	,, ,,	Occupation of Toulon for Louis XVII.	In part
60	,,	West Indies	,,	,, ,,	Capture of Martinique (2)	No
61	,,	,, ,,	,,	,, ,,	,, Tobago (2)	Yes
62	,,	,, ,,	,,	,, ,,	Occupation of Forts of Haiti	,,
63	1793-94	Flanders	,,	,, ,,	To restore Monarchy	No
64	,,	West Indies	,,	,, ,,	Occupation of Forts of St. Domingo	Yes
65	March, 1794	,, ,,	,,	,, ,,	,, ,, Martinique (3)	,,
66	April ,,	,, ,,	,,	,, ,,	Capture of Sta. Lucia (4)	,,
67	,, ,,	,, ,,	,,	,, ,,	,, Guadaloupe (2)	,,
68	May-Aug., 1794	Mediterranean	,,	,, ,,	,, Corsica (1)	,,
69	September ,,	Africa	French Republic	English	,, Sierra Leone	,,
70	January, 1795	Mediterranean	,, ,,	,,	,, Corsica (2)	No
71	March ,,	,,	,, ,,	,,	,, ,, (3)	,,
72	June ,,	English Channel	English	French Republic	Expedition to Quiberon Bay (1)	,,
73	September ,,	Africa	,,	,, ,, & Dutch ,,	Conquest of Cape of Good Hope (2)	Yes
74	1795-96	East Indies	,,	Dutch ,,	Capture of Ceylon, Malaccas, and Cochin (2)	,,
75	1796	West Indies	,,	French ,,	Affairs in Granada and Sta. Lucia (5)	,,
76	,,	North America	French Republic	English	Destruction of shipping in Newfoundland	,,
77	,,	Soldanha Bay	Dutch ,,	,,	Capture of Cape of Good Hope (3)	No
78	,,	West Indies	English	French Republic	Re-conquest of Windward Isles	In part
79	,,	South America	,,	Dutch ,,	Capture of Demerara, Essequibo, and Berbice	Yes
80	1794-96	Mediterranean	,,	French ,,	Hindrance to Invasion of Italy	In part
81	1796	,,	,,	Tuscans	Capture of the Island of Elba	Yes
82	,,	,,	French & Corsicans	English	,, Corsica (4)	,,
83	December, 1896	Madagascar	English	French Republic	Destruction of Foul Point	,,
84	1796-97	Ireland	French Republic	English	Invasion of Ireland (Hoche's)	No
85	February, 1897	West Indies	English	Spanish	Capture of Trinidad	Yes
86	1797	Spain	,,	,,	Bombardment of Cadiz	No
87	July, 1797	Canary Islands	,,	,,	Capture of Santa Cruz	,,
88	April ,,	West Indies	,,	,,	,, Porto Rico	,,
89	1797-98	English Channel	French	English	Invasion of England. Capture of Isles of St. Marouf	No
90	May, 1798	,, ,,	English	French Republic	Destruction of sluice-gates at Ostend	In part
91	,, ,,	Mediterranean	French Republic	Knights of St. John	Capture of Malta (12th June) (1)	Yes
92	1798	,,	,, ,,	Mamelukes	Conquest of Egypt (1)	,,
93	Nov. ,,	,,	English	Spanish	Capture of Minorca (3)	,,
94	Aug. ,,	Atlantic	French Republic	English	Humbolt's Invasion of Ireland (2)	No
95	1798-1800	Mediterranean	English	French Republic	Blockade and capture of Malta (2)	Yes
96	1798-99 (Corfu)	,,	Russo-Turkish	,, ,,	Capture of Ionian Islands (2)	,,
97	Feb. 1799	,,	English	,, ,,	Bombardment of Alexandria (1)	No
98	Jan-June, 1799	,,	French	Syrians	Invasion of Syria and Siege of Acre (1)	,,
99	June, 1799	,,	Turks	French Republic	Invasion of Egypt (Landing in Aboukir Bay) (2)	,,
100	,,	Netherlands	Anglo-Russian	,, ,,	Combined Expedition to Helder	,,
101	March ,,	Italy	French Republic	Neapolitans	Capture of Brindisi	,,
102	April-May, 1799	East Indies	English	Sultan of Mysore	,, Seringapatam	,,
103	May, 1799	Adriatic	Turco-Russian	French Republic	,, Ancona	,,
104	July ,,	South America	English	Dutch ,,	,, D. Guiana (Surinam) (1)	,,
105	,, ,,	South Italy	,,	French ,,	Expulsion of French from South Italy	,,
106	1799	Egypt	Anglo-Turkish	,, ,,	Operations under Sir S. Smith (3)	In part
107	May, 1800	Italy	Anglo-Austrian	,, ,,	Siege of Genoa	Yes
108	June ,,	France	English	,, ,,	Expedition to Quiberon Bay (2)	,,
109	Aug. ,,	Spain	,,	Spanish	Bombardment of Ferrol	No
110	Sept. ,,	West Indies	,,	Dutch	Capture of Isle of Curaçoa (1)	Yes
111	March, 1801	Sound and Baltic	,,	Northern Confeder.	Expedition to Copenhagen (1)	,,
112	,, ,,	Isle of Elba	French	Tuscans	Attack on Porto Ferrajo	No
113	,,	Egypt	English	French	Expedition to Egypt	Yes
114	,, ,,	West Indies	,,	Swedes	Capture of St. Bartholomew and St. Martin (2)	,,
115	,, ,,	,, ,,	,,	Danes	,, St. Thomas, St. John, and Santa Cruz	,,
116	April ,,	,, ,,	,,	Dutch	,, St. Eustatius (3) and Saba	,,
117	July ,,	Africa	,,	Portuguese	,, Madeira	,,
118	June ,,	East Indies	,,	Dutch	,, Ternati	,,
119	,,	,, ,,	,,	Portuguese	,, All Portuguese garrisons and factories except Macao	,,
120	Dec. ,,	West ,,	French	Toussaint-Louverture	Subjugation of San Domingo (2)	Partly

Peace of Amiens—Signed 25th March, 1802. Ho

ect ed.	Books of reference.	Remarks.—Reference letters for classification.
	Case XX. "Hostilities without declaration, etc."	
	All Histories	(a) (d) (k) (m) (a) (i)
	"Influence of Sea Power, etc." (Mahan), p. 269. Colomb's Lecture, p. 17	(g) (h) (m) (x)
	" " " " p. 276	Not despatched (h)
	Minor Expeditions, pp. 7-10	(h) (r) (p) (x) (m) (h)
	"Influence of Sea Power, etc." (Mahan), p. 276	(h) (t) (y)
	" " " " p. 272	

YEARS' WAR.

art	"Influence of Sea Power, etc.," pp. 285-91. Colomb's Lecture, p. 15	(g) (h) (x) (h)
	" " " p. 306	(g) (h) (m)
	" " " p. 293	(g) (h) (m) (x)
	" " " p. 294. Colomb's Lecture, p. 19.	(h) (k) (p) (r) (x)
	Minor Expeditions, pp. 10-12	(h) (p) (r) (x) (h)
	" " pp. 12-15	(a) (d) (q)
	"Influence of Sea Power, etc." pp. 307-8	(b) (g) (y) (y) (h) (y)
	" " " p. 304	(g) (h) (p) (x)
	" " " p. 294	All the Lesser Antilles or Windward Isles became British (Rodney in West Indies) (g) (h) (m) (t) (y)
	" " " p. 304	(g) (h) (s) (z)
	" " " "	And all the Philippine Islands (g) (h) (v)
	" " " p. 295	During peace (g)
	" " " p. 310	" (g) (h)
	Minor Expeditions, pp. 16-20	
	"Influence of Sea Power, etc." p. 314	
	" " " p. 314-315	
	" " " p. 315	
	" " " "	
	" " " pp. 334-5	
	" " " "	

MERICAN INDEPENDENCE.

	Admiral Colomb's Lecture, p. 19	(h) (l) (m)
	Mahan's "Influence of Sea Power, etc.," pp. 359-376	English compelled to retire on New York in the next year by D'Estaing (d) (h)
	" " " " "	(g) (h)
	" " " " "	(g) (h)
	" " " " "	(h) (y)
	" " " " "	(h) (y)
	" " " " "	(g) (h) (y)
	" " " " "	(g) (h) (y)
	" " " " "	(d) (h) (i)
	" " " " "	(a) (j) (k) (o)
	" " " " "	(b) (j) (q)
	" " " " "	Eventually English retired because of pressure of French Fleet in July, 1780 (b) (d)
	Also Admiral Colomb's Lecture, p. 19	(g) (h) (q)
	Mahan's "Influence, etc.," pp. 376-387	(g) (y)
	" " " "	(g) (h) (q)
	" " " "	(g) (h) (q)
	" " " "	(g) (h) (y)
	" " " "	(d) (h) (i) (q)
	" " " "	After six months' siege of Port Mahon (b) (g) (m) (p) (x) (y)
	Also Admiral Colomb's Lecture, p. 16	(l) (q)
	Mahan's "Influence, etc.," pp. 376-387	By surprise (g) (y)
	" " " pp. 451-468	(g) (k)
	" " " "	(g) (h)
	" " " "	(g) (j) (q)
	" " " "	(g) (h) (y)
	" " " "	(h)
	" " " "	(g) (h) (y)
	" " " "	(e)
	" " " "	(h) (q)

IRST FRENCH REVOLUTION.

t	James, Vol. I., pp. 193-6	James calls Pondicherry an important fortress (b) (h) (y)
	" " p. 113	Fishing villages in Newfoundland (c)
	Alison, Vol. II., pp. 342-5	(b) (j) (z)
	James, Vol. I., p. 115	French Royalists helping (i) (j) (n)
	Alison, Vol. III., p. 127. Also "Sea Power and French Revolution" (Mahan), p. 115.	(g) (h) (x) (y)
	"Sea Power and French Revolution," p. 112	(g) (h) (n) (s)
	Alison, Vols. II. and III.	Siege of Dunkirk, 1793 (b) (d) (j)
	" Vol. III., p. 127. James, Vol. I., pp. 116-18	Bad preparation of siege material (m) (o) (z)
	"Sea Power and French Revolution," Vol. I., pp. 114-15	First expedition in 1893 failed. Second expedition under Sir J. Jarvis and Sir C. Grey. Forts held till 1796 (g) (h) (y)
	Alison, Vol. III., p. 127. James, Vol. I., pp. 216-20	Sir J. Jarvis and Sir C. Grey. Fort Royal, now Fort de France (g) (h) (y)
	"Sea Power and French Revolution," Vol. I., p. 114	No lives lost. Re-taken 19th June, 1795 (g) (h) (y)
	James, Vol. I., pp. 220-1. "Sea Power and French Rev.", Vol. I., pp. 114-15	Yellow fever. Re-captured by French in 1795 after six months' fighting (g) (h) (s) (y)
	" " pp. 222-4. " " " " pp. 114-16	Forces released from Toulon (g) (h) (y) (l, except St. Florengo and Calvi)
	" " pp. 186-93. Alison, Vol. III., p. 128	Many merchantmen captured (c) (r)
	"Sea Power and French Revolution," Vol. I., p. 118	Immense desertions at Toulon (g) (h) (q)
	James, Vol. I., pp. 227-29	Defeated by Mediterranean Fleet under Lord Hotham. Nelson acts on Corniche. Jomini, Vol. X., p. 62 (g) (q)
	"Sea Power and French Revolution," Vol. I., pp. 181-89, and 194	(d) (i) (j)
	Alison, Vol. III., p. 200	(h) (y)
	" " pp. 266-11. Minor Expeditions, pp. 20-7	These in 1795, except whole of Ceylon and Malaccas (g) (h) (y)
	James, Vol. I., pp. 252-5	Of little importance (r) (l) (t)
	Alison, Vol. III., p. 215. "Sea Power and French Rev.," Vol. I., p. 170	(h) (q) (y)
	James, Vol. I.. pp. 295-362	Except Guadaloupe. N.B.—Sixth mention of S. Lucia. Sir R. Abercromby's expedition forced back twice by weather (g) (h) (k) (m) (s) (y)
	Alison, Vol. III., p. 345. "Sea Power and French Rev.," Vol. I., p. 170	No resistance (h) (y)
	James, Vol. I., pp. 302-5 and 371-2	(j) (l)
	Alison, Vol. III., p. 345	(g) (h) (l) (y)
	" " " James, Vol. I., pp. 366-7	English leave the Mediterranean (g) (h) (y)
	" " p. 445. "Sea Power and French Rev.," Vol. I., p. 171	(r)
	James, Vol. I., pp. 367-71. "Sea Power and French Rev.," Vol. I., p. 119	Battle of Cape St. Vincent (d) (k) (m) (q)
	" " p. 367. " " " " "	(g) (h) (p) (y)
	Jomini, "Guerres de la Revolution," p. 206	To keep men employed; meanwhile the Ionion Islands had been given to France by treaty of Campio Formio (h) (l)
	"Sea Power and French Revolution," Vol. I., p. 213	(g) (h) (n) (p)
	" " " pp. 215-16	St. Juan too strongly fortified (g) (h) (x)
	James, Vol. I., p. 374	Preparations really made to cover expedition to Egypt (a) (g) (m) (p) (q)
	" Vol. II., pp. 2-22. Alison, Vol. III., pp. 347-8	Only part able to land, and these had to surrender (k) (r) (m)
	"Sea Power and French Revolution," Vol. I., pp. 221-2	Napoleon on the way to Egypt (g) (h) (q) (v)
	James, Vol. II., pp. 97-8	(e) (m) (p) (q) (v) (w)
	"Sea Power and French Rev.," Vol. I., p. 249. James, Vol. II., pp. 53-54	(g) (h) (m) (y)
	" " " " " pp. 56-60	Two later expeditions failed to land (j) (n) (q) (z)
	James, Vol. II., p. 99	(b) (g) (j) (y)
	"Sea Power and French Revolution," pp. 251-2.	(l) (n)
	James, Vol. II., III., pp. 115-16	Philippeaux and Sir S. Smith help to defend Acre (e) (h) (m) (q) (v)
	Minor Expeditions, pp. 27-31. James, Vol. II., pp. 117-119	October, 1799, Napoleon leaves Egypt (e) (h) (j)
	"Sea Power and French Rev.," p. 257. James, Vol. II., pp. 149-51	(d) (h) (j)
	" " " pp. 251-287. James, Vol. II., pp. 156-187	(h)
	Berthier's "Campagnes en Egypte et en Syrie"	(e) (h)
	"Sea Power and French Rev.," Vol. I. p. 287, Adml. Colomb's Lect., p. 16	Russians did not succeed, but Austrians did at end of year (h) (j)
	James, Vol. II., pp. 122-147	(h) (y)
	" " pp. 188-89. "Sea Power and French Rev." p. 288	(h) (j) (l)
	" " pp. 190-1 " " " p. 286	Failure at Damietta, but capture of El-Arich (h) (j) (p) (m)
	" " pp. 195-8	Only held for a few days—Marengo (b) (j)
	" " pp. 286-96 " " " p. 291	To help Chouans (p) (h)
	Also Berthier	Weakness of Lieut-General Pulteney (h) (p) (r)
	James, Vol. II., pp. 296-8 " " " p. 322	Surrendered with little or no fighting (g) (h) (l) (y)
	Also Berthier	(b) (l)
	James, Vol. II., pp. 305-12. Minor Expeditions, pp. 31-35	English helped Tuscans (g) (h) (q)
	"Sea Power and French Rev.," Vol. II., pp. 8-10	(e) (h) (j) (k) (m) (p) (x)
	James, Vol. II., p. 271	(g) (h) (y)
	" " p. 374	(g) (h) (y)
	" " pp. 271-2	(g) (h) (y)
	" " pp. 373-4	No resistance (g) (h) (y)
	" " pp. 272-283	Sixty-nine days' resistance (g) (h) (y)
	" " pp. 302-5	(h) (y)
	" Vol. III., pp. 9-13	
	" " pp. 5-6	
	" " pp. 25-27	
	" " pp. 59-61	
	" " pp. 64-83. "Sea Power & French Rev.," Vol. II., pp. 43-57	
	" " pp. 95-98	
	" " pp. 92-94-98—III.	
	Also Colomb's Lecture	
	James, Vol. III. p. 159	
	" " "	
	" " "	
	" " p. 160	
	" " "	
	" " "	
	" " pp. 170-173	During the peace (g) (h) (s)

2. Hostilities suspended, 1st October, 1801.

121	June, 1803	West Indies	English	French Empire	Capture of Sta. Lucia (6) and Tobago (3)	Yes
122	November, 1803	,, ,,	,,	,, ,,	Surrender of St. Domingo (3) to Negroes	,,
123	September ,,	,, ,,	,,	Dutch	Capture of Demerara (2) Essequibo and Berbice	,,
124	Jan.-Feb., 1804	,, ,,	,,	,,	,, Curaçoa (2)	No
125	April ,,	South America	,,	,,	,, D. Guiana (Sarinam) (2)	Yes
126	1804-5	English Channel	French Empire	English	Invasion of England	No
127	February, 1805	West Indies	,, ,,	,,	Missieny at Dominica (2) Nevis and Montserrat	Partly
128	January, 1806	Africa	English	Dutch	Capture of Cape of Good Hope (Popham) (4)	Yes
129	April ,,	Italy	,,	French Empire	Sir S. Smith aids Neapolitans	Partly
130	1806-7 ,,	South America	,,	Spaniards	Expedition to Rio de la Plata (Popham)	No
131	1st Jan., 1807	West Indies	,,	Dutch	Capture of Curaçoa (3)	Yes
132	August ,,	Denmark	,,	Danes	Expedition to Copenhagen (2)	,,
133	,,	Heligoland	,,	,,	Occupation of Heligoland	,,
134	1806-7 ,,	Bosphorus	,,	Turks	To overawe the Sultan	No
135	March, 1807	Mediterranean	,,	,,	Expedition to Egypt (5)	,,
136	December, 1807	West Indies	,,	Danish	Capture of St. Thomas and Santa Croix (2)	Yes
137	1808	Mediterranean	,,	French Empire	Expedition from Sicily to aid Catalans	No
138	August, 1808	Portugal	,,	Franco-Russians	Invasion of Portugal (2)	Yes
139	Oct.1808-Jan.1809	Peninsula	,,	French Empire	,, Spain (3)	No
140	May, 1808	Sound and Baltic	,,	Russians	Expedition to help Swedes	,,
141	March ,,	West Indies	,,	French Empire	Capture of Marie-Galante, and Désirade	Yes
142	August ,,	Denmark	,,	,, ,,	10,000 Spaniards carried to Spain.	,,
143	Oct.-Dec., 1808	Mediterranean	,,	,, ,,	To raise Siege of Rosas (Lord Cochrane)	No
144	January, 1809	West Indies	,,	,, ,,	Capture of Martinique (4)	Yes
145	,, ,,	South America	Anglo-Portuguese	,, ,,	,, French Guiana	,,
146	,, ,,	Peninsula	English	,, ,,	Expedition to occupy Cadiz from Portsmouth	No
147	March ,,	,,	,,	,, ,,	Capture of Vigo (2)	Yes
148	May ,,	Kattegat	,,	Danes	,, Is'and of Anholt	,,
149	May-June ,,	Peninsula	Anglo-Portuguese	French Empire	Campaign of the Douro (3)	,,
150	July ,,	Scheldt	English	Dutch	Walcheren Expedition	No
151	June-Aug. ,,	Peninsula	Anglo-Spanish	French Empire	Campaign of Talavera (4)	,,
152	October ,,	Mediterranean	English	,, ,,	Capture of Islands of Zante, Cephalonia, Cerigo, Ithaca, etc.(4)	Yes
153	July, 1809	Atlantic	English	French Empire	Capture of Senegal, West Coast of Africa	Yes
154	,, ,,	Mediterranean	Anglo-Neapolitan	,, ,,	Invasion of Italy (3)	No
155	September, 1809	Indian Ocean	English	,, ,,	Capture of Rodriquez & S. Paul's, I. de Bourbon (1)	Yes
156	February, 1810	Peninsula	,,	,, ,,	To garrison Cadiz (3)	,,
157	,, ,,	West Indies	,,	,, ,,	Capture of Guadaloupe (3)	,,
158	,, ,,	,, ,,	,,	Dutch	,, S. Martin (3), S. Eustatius (4), Saba (2)	,,
159	,, ,,	Malucca Sea	,,	,,	,, Dutch Islands	,,
160	March ,,	Mediterranean	,,	French Empire	,, Island of St. Maura	,,
161	July ,,	Indian Ocean	,,	,, ,,	,, Ile de Bourbon (2)	,,
162	August ,,	Peninsula	Anglo-Spanish	,, ,,	Invasion of Seville from Cadiz (4)	No
163	October ,,	,,	English	,, ,,	Expedition of Fuengirola	,,
164	,, ,,	,,	,,	,, ,,	,, from Coruna	In part
165	1810-11-12	,,	,,	,, ,,	Wellington defends Portugal (4)	Yes
166	November, 1810	Indian Ocean	,,	,, ,,	Capture of Ile de France	,,
167	March, 1811	Kattegat	Danes	English	,, Island of Anholt (2)	No
168	April ,,	Asia	English	Dutch	,, Java	Yes
169	May ,,	Peninsula	,,	French Empire	Troops sent to Tarragona	No
170	,,	Coast of Italy	,,	,, ,,	Landings at Palermo and elsewhere (4)	Yes
171	January, 1812	Peninsula	,,	,, ,,	,, Lequestio, Santander, etc.	,,
172	May ,,	,,	,,	,, ,,	Captain Ussher, R.N., at Almonecar	—
173	1812-13 ,,	,,	,,	,, ,,	Invasion of Spain (5) Wellington	,,
174	1812-13-14	Mediterranean and Bay of Biscay	,,	,, ,,	Many naval landings and "cuttings out"	,,
175	October, 1813	N. Sea & Elbe River	Anglo-Russians and Swedes	,, ,,	Capture of Cuxhaven and Glückstadt	,,
176	1813-14	France	English	,, ,,	Wellington's Invasion of France	,,
177	,,	Canadian Lakes	,,	Americans	Many combined enterprises	Partly
178	June-Sept., 1814	Chesapeake Bay	,,	,,	Capture of Washington and Siege of Baltimore	Yes
179	August ,,	Maine, U.S.	,,	,,	Expedition to the Penobscot	,,
180	1814-15	Orleans, U.S.	,,	,,	Capture of New Orleans	No
181	,,	Belgium & France	,,	French, etc.	Expedition to Belgium	Yes
182	March ,,	France	Napoleon I.	The Bourbons	Landing of Emperor from Elba	,,
183	Jan. ,,	Georgia, U.S.	English	Americans	Boat Expedition in St. Mary's River	,,

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184	August, 1816	Mediterranean	English	Bay of Algiers	Bombardment of Algiers	Yes
185	1824-26	Burmah	,,	Burmese	Invasion of Burmah (1)	,,
186	1824	Africa	,,	Ashantees	,, Ashantee	No
187	1826-27	Peninsula	,,	Spanish	Expedition to Portugal	Yes
188	1828	Greece	French	Turks	,, Morea	,,
189	1830	Africa	,,	Algerians	,, Algiers	,,
190	1830-40	China	English	Chinese	Invasion of China. Capture of Hong Kong	,,
191	1840	Syria	,,	Egyptians	Bombardment of St. Jean d'Acre	,,
192	1850-53	Africa	,,	Kaffirs	Invasion of Kaffirland	,,
193	1852	English Channel	French	English	,, England	No
194	March, 1852	Burmah	English	Burmese	,, Burmah	Yes
195	1854-55	Crimea	Anglo-French	Russians	Capture of Sevastopol	,,
196	1854	Baltic	,, ,,	,,	,, Bomersund	,,
197	1856	Persia	English	Persians	Invasion of Persia	,,
198	1856-58	China	,,	Chinese	,, China	,,
199	1859	,,	,,	,,	Attack of Taku Forts	No
200	1860	,,	Anglo-French	,,	Invasion of China	Yes
201	1862	North America	Federals	Confederates	Expedition to York Town Peninsula	No
202	1863	,, ,,	,,	,,	Capture of Charleston	Yes
203	,,	Japan	English	Japanese	Expedition to avenge murder of Mr. Richardson	,,
204	,,	Mexico	,,	Mexicans	,, Mexico	,,
205	,,	Africa	,,	Ashantees	Invasion of Ashantee (2)	No
206	,,	New Zealand	,,	Maories	Maori War	Yes
207	1867-68	Abyssinia	,,	King Theodore	Capture of Magdala	,,
208	1870	North America	,,	Louis Riel	Red River Expedition	,,
209	1873-74	Africa	,,	Ashantees	Invasion of Ashantee (3)	,,
210	1878-79	,,	,,	Zulus	,, Zululand	,,
211	1880	South America	Peruvians	Chilians	Bombardment of Arica	,,
212	July, 1881	Africa	French	Tunis	,, and Capture of Sfax	,,
213	,, 1882	Egypt	English	Arabi Pasha	,, of Alexandria	,,
214	Aug.-Sept., 1882	,,	,,	,, ,,	Invasion of Egypt	,,
215	1882	Africa	French	Madagascar	Expedition to Madagascar	Yes
216	,,	Asia	,,	Tonquin	,, Tonquin	,,
217	1884	Egypt	English	Soudanese	,, Soudan (Suakim)	,,
218	1884-85	,,	,,	,,	Nile Expedition	No
219	1886	East Indies	,,	Burmese	Conquest of Burmah	Yes
220	1890	Africa	,,	Vitu	Expedition against Vitu	,,
221	August, 1891	South America	Congressists	Balmaceda	Landing in Bay of Quintero, Chili	,,
222	1892	,, Africa	French	Dahomey	Conquest of Dahomey	,,
223	1893	,, ,,	English	Matabeles	Expedition in Matabeland	,,
224	Mar.-Apr., 1894	,, ,,	,,	Fodi Sillah	Punitive Expedition	,,
225	September, 1894	,, ,,	,,	Nanna	,, ,,	,,
226	,, ,,	Asia	Japanese	Chinese	Invasion of the Corea	,,

THE LETTERS IN THE LAST COLUMN OF THE TABLE REFER TO THE FOLLOWING CLASSIFICATIONS OF EXPEDITIONS.

In 226 expeditions, from 1784 to 1894.	No. of times the reference letter is employed.
(a) Threat of invasion of England	7
(b) Attack on big fortress	16
(c) Mere attack on undefended town or port	3
(d) Invasion of country of Civilised Power	25
(e) Invasion of country of Semi-civilised Power	19
(f) Invasion of country of Savage Power	12
(g) Attack of an Island	76
(h) Attack on a defended port or town (not big fortress)	126
(i) Insurgents or allied inhabitants not aiding as effectually as expected	9
(j) Made by allied forces	45
(k) Delayed by weather	13
(l) Made principally by Navy	28
(m) Useful as example	45
(n) Insufficient force for object	15
(o) Preparations especially bad	4
(p) Resisted landing	24
(q) Attack made without command of the Sea	21
(r) Mere raid, or diversion	14
(s) Sickness or health of troops of special import	11
(t) Naval Commander-in-Chief above General	3
(v) Military Commander-in-Chief above Admiral	5
(w) Seized port suitable as base at once	2
(x) Landed on open beach or undefended place, then moved to attack post suitable as base	22
(y) Capture principally depending on Sea Power	61
(z) Expedition to aid ally, landing at allied port	13

N.B.—The absence of any of the above letters after an expedition has no negative import; that is, does not imply that such and such an incident or characteristic did not occur in the expedition, and the table does not pretend to be complete and give every expedition that occurred in the period.

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James' "N.H.," Vol. III., pp. 206-7	(g) (h) (p) (y)
,, ,, ,, pp. 207-10	(g) (h) (y)
,, ,, ,, p. 207	
,, ,, ,, pp. 283-8	
,, ,, ,, pp. 288-90	
,, ,, ,, pp. 315-19	Without bloodshed (h) (y)
See also "Sea Power and French Revolution," and many other works	(g) (h) (l) (n)
James, Vol. IV., pp. 176-81	(h) (x) (y)
,, ,, pp. 272-4	Army of Invasion at Boulogne (a) (d) (j) (m) (q)
,, ,, pp. 216-18	Capture of Stores and Indemnity of £5,500 (g) (h)
,, ,, pp. 274-7, and 354-6	(h) (k) (x) (y)
,, ,, pp. 351-4	(h) (j)
Case XVI. "Hostilities without declaration of War"	(h) (i) (n) (m)
James, Vol. IV., pp. 284-295. Minor Expeditions, pp. 45-57	(g) (h) (l) (m) (p)
,, ,, pp. 290-6. "Sea Power and French Rev.," Vol. II., p. 302	To seize Danish Fleet (b) (r) (x)
,, ,, pp. 296-312	Without fighting (g) (h) (l) (y)
,, ,, pp. 312-14. Cust VII., p. 6	Marines landed (h) (l)
Case LV., "Hostilities without declaration of War"	(b) (e) (n) (x)
James, Vol. IV., p. 354	(g) (h) (y)
Napier's "Peninsula War," Vol. V., Chap. iv.	Murat, demonstrations prevented this expedition from sailing (d) (j) (z)
Napier, Vol. II., Chaps. iii. and iv. James, Vols. V. and II.	Convention of Cintra, 30th August (d) (j) (m) (z)
"Sea Power and French Revolution," Vol. II., p. 292	(d) (j) (m) (n) (z)
Napier, Vols. III. and IV. "Sea Power and French Rev.," Vol. II., p. 296	Never tried to land, on account of disagreement with King of Sweden
James, Vol. V., pp. 12-13	(g) (h) (l) (y)
,, ,, pp. 91-2	(l)
,, ,, pp. 17-19. Napier, Vol. III., Chap. iii.	Navy assisted garrison in defence (j) (l) (n) (z)
Napier, Vol. V., Chap. iv.	(g) (h) (x) (y)
James, Vol. V., pp. 206-9	(h) (j) (p) (y)
,, ,, pp. 209-13	Spaniards too jealous to allow landing (i) (z)
Napier, Vol. VI., Chap. ii.	Main force Spanish (h) (j) (l)
,, VII., Chap. iv.	(g) (h) (y)
James, Vol. V., p. 130	(d) (j)
Napier, Vol. VII., Chap. iii. "Sea Power and French Rev.," Vol. II., p. 315	(d) (m) (s) (x)
,, VIII., Chap. iv. Minor Expeditions, pp. 57-80	
James, Vol. V., pp. 131-41	Bad Commissariat arrangements (d) (i) (j)
Napier, Vol. VIII., Chaps. v. and ix.	
"Sea Power and French Revolution," Vol. II., p. 315	Without resistance (g) (h) (j)
James, Vol. V., p. 146.	(h) (x) (y)
James' "N.H.," Vol., V. pp. 204-6	(h) (j)
Napier, Vol. VII., chap. iv.	(g) (h) (r) (x) (y)
James ,, V., pp. 196-200	(j) (z)
Napier ,, X , chap. v.	(g) (h) (s) (y)
James ,, V., pp. 313-14	(g) (h) (y)
,, ,, ,, 314	(g) (h) (y)
,, ,, ,, 314-24	(g) (h) (p) (x) (y)
,, ,, ,, 215-16	(g) (h) (k) (y)
,, ,, ,, 269-273	(h) (j)
Napier, ,, XI., chap. v.	(j)
,, ,, XII., ,, i.	—
,, ,, ,, Vols. IX.-XVI.	Lines of Torres Vedras and sieges of Ciudad Rodrigo and Badajos (j) (z)
James, Vol. V., pp. 324-6	Difficulties with Reefs here
,, ,, ,, 341-4	(g) (h) (p)
,, ,, VI., pp. 26-39	(g) (h) (m)
Napier ,, XIII., chap. v.	Did not land
James ,, V., pp. 372-4	(h) (l) (p) (r)
,, ,, VI., pp. 61-2. Napier, Vol. XVII., chap. ii.	Much surf at Lesquestio (h) (j) (k) (l)
,, ,, ,, 63	Acting with Guerillas (h) (j) (i)
Napier	Shift of base (d) (j (m)
James, Vol. VI., pp. 67-76 and 165-182	In Italy and Peninsula (h) (l) (j) (r)
,, ,, 157	—
Napier	(d) (j) (m)
James, Vol. VI., pp. 243-53 and 331-49	(h) (p)
,, ,, 301-24	(d) (h) (m) (x)
,, ,, 329-30	(h) (r)
,, ,, 355-60	(b) (n) (p)
All Histories	Culminating in Waterloo (d) (j) (m)
,,	(d) (j) (m)
James, Vol. VI., pp. 360-61	(c) (l) (r)

the Long War.

James' "N.H.," Vol. VI., pp. 397-410	(j) (l)
,, ,, ,, pp. 420-70	(e) (m) (s)
Annual Register, Chap. ix	(f) (n)
,, ,, Chaps. vii., xi., xii., 1826; and ix., x., 1827	(d) (j) (z)
,, ,, pp. 243-44	(j) (z)
Admiral Colomb's Lecture, pp. 24-5. Staff Duties, p. 184	(e) (m) (k)
Annual Register and "History of our own Times," p. 120	(e)
,, ,, p. 547	Town rendered untenable in three hours (h) (l)
"History of our own Times," p. 120	(f)
,, ,, ,, ,,	Never despatched (a)
Annual Register, Chap. x., and for 1853	War continued into next year on account of difficulties of roads (e) (h) (p)
Kinglake's "Crimea," also Hamley's	(b) (d) (j) (k) (m) (n) (o) (s) (v) (x)
Annual Register, Chap. xviii.	—
,, ,, Staff Duties, p. 184	(e)
,, ,,	First troops sent out, stopped, and landed in India to quell Mutiny (e) (j)
,, ,, and Wolseley's "Chinese War"	(h) (j) (l) (m) (n) (o)
Wolseley's "Chinese War"	(e) (h) (j) (m) (p) (v)
Comte de Paris' "Civil War in America"	(d) (m)
Admiral Colomb's Lecture, p. 19, and Lord Wolseley's Paper	(b)
"History of our own Times"	—
,, ,, ,,	(j)
,, ,, ,,	(f) (s)
,, ,, ,,	(f)
Hozier's "Expedition to Abyssinia," also Stanley's	(e) (m)
Huyshe "The Red River Expedition"	(m)
Stanley's Account and Annual Register	(f) (s) (m)
Annual Register	(f)
,, ,,	(h) (m)
,, ,, also Clarke's "Fortification"	(e) (h) (m)
Clarke's "Fortification"	(b) (l) (m) (w)
"Military History of the Campaign," 1882	Official Accounts (e) (m)
Annual Register, p. 224	—
,, ,, ,,	—
History of the Soudan Campaign	(f)
,, ,, ,, ,,	(f)
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,, ,, p. 149	—
Admiral Colomb's Lecture, p. 26	(p) (h)
Annual Register, p. 209	(f)
,, ,, pp. 443-447	(f)
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,,	(f) (m)
,,	(e) (m)

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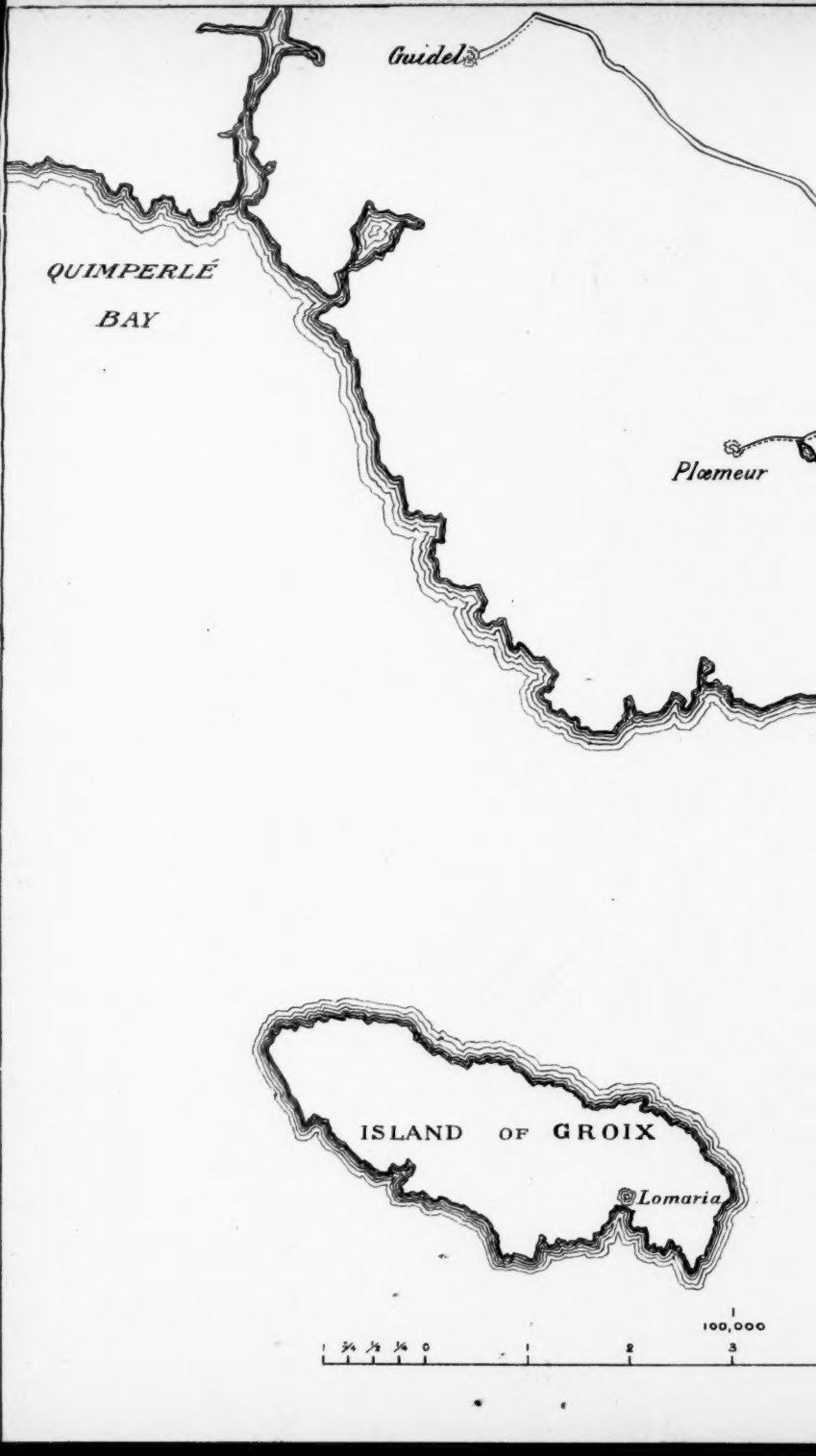
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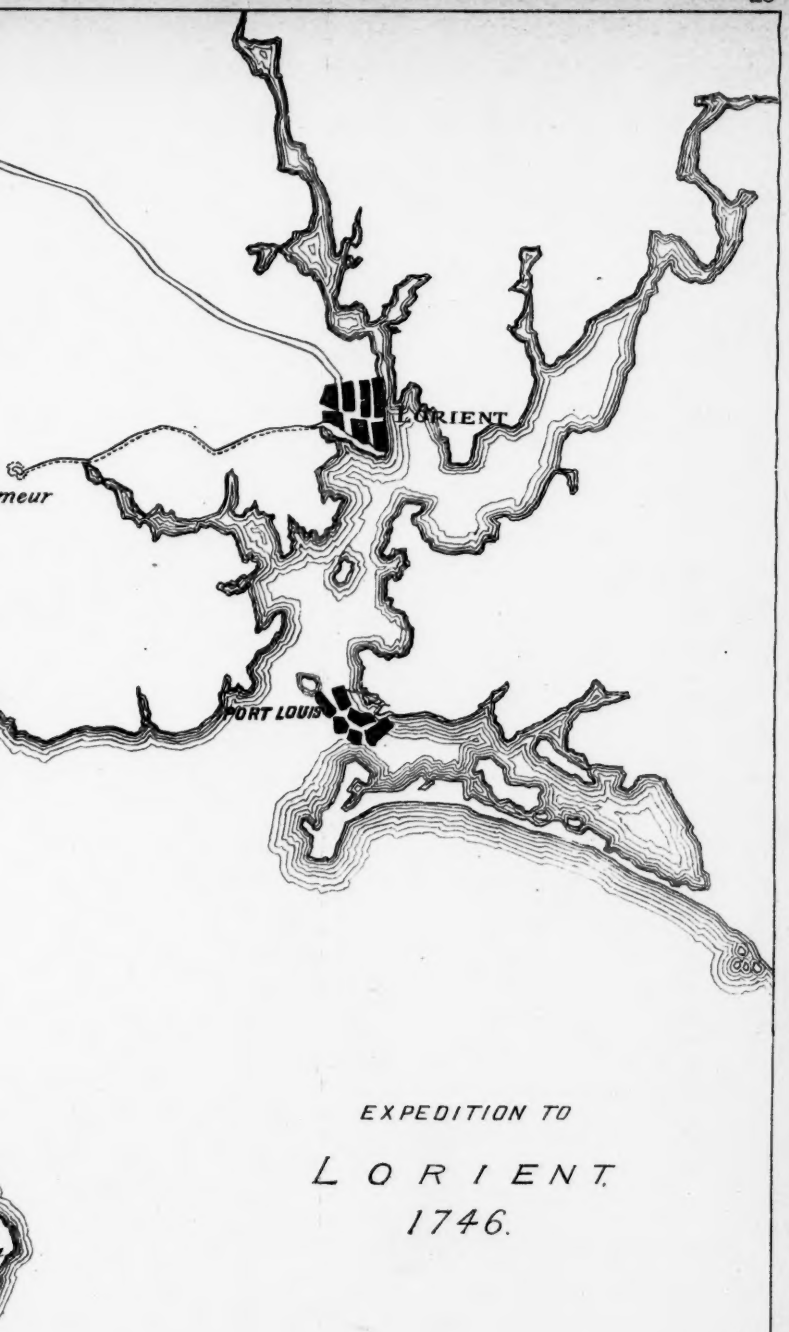

EXPEDITION TO

L O R I E N T.

1746.

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II.—STRATEGIC LESSONS.

So constant are the mutations affecting all military questions, and so relentless its progress, that it has been thought useless to go back farther than 150 years in tabulating examples, though there are many expeditions both useful and instructive before that period. It is, for instance, on record that Edward III. "embarked as many as 50,000 men in the Port of Orwell, with their horses and their baggage, all in the space of four and twenty hours," for operations in France; and from the time of the Norman Conquest onwards our history abounds in such enterprises over seas. Indeed, happily for us, all our campaigns on *terra firma*, except for some civil strife, involve the operations of embarking an expeditionary force, and landing it on a foreign shore, and while our Navy is kept to a fitting strength, and retains its ancient strategical and tactical superiority, we may hope that the history of the future shall not differ widely in this respect from that of the past.

It may be asked on the other hand, as later examples are so numerous, "Why go back so far?" The answer to this objection is that the periods first studied—those of the War of the Austrian Succession, of the Seven Years' War, and of the War of American Independence—were especially fruitful in expeditions of national interest; and by being antecedent to the feverish race after invention and discovery of this century they serve to mark the contrast, and to teach the general advance that the methods of carrying out these particular operations of war have made in the period. Moreover, most of the earlier strategic lessons are fully applicable to the campaign of to-day—a point made so clear by the writings of Clausewitz, Hamley, Captain Mahan, and many other great authors, that it is superfluous to dwell upon it here.

However, the earlier expeditions included within this period show great lack of method and absence of careful preparation, and, before applying their lessons to the present day, it will be necessary to point out the general effect which modern inventions and improvements have upon the strategy of the subject.

Expedition to Lorient, 1746.

See Map I.

For instance, in 1746, preparations had been made for an expedition to Quebec, but the departure was delayed for various reasons, until the season became too advanced to risk a force on such an exposed coast as that of North America, and this led to the expedition to Lorient. The design was to employ the troops already collected, to destroy the stores and ships belonging to the French East India Company at Lorient; and by making a descent on the coasts of Brittany to cause a diversion which would facilitate the operations of Austria in the South of France, and of the Allied Armies in Flanders. Two men-of-war and a sloop were despatched ahead of the expedition (which sailed on the 14th September, 1746), to reconnoitre the coast and select a landing place. Admiral Lestock commanded the fleet, consisting of nine men-of-war, two sloops, and some details. At this time we were practically masters of the sea,

and had little to fear from hostile fleets. The soldiers under General Sinclair were embarked in thirty-three transports, and numbered some 4,000 men.

On the 19th September the fleet anchored in Quimperlé Bay, having been joined by the reconnoitring vessels on the 18th. The expedition was an entire surprise to the French, and only an irregular force could be collected to oppose the landing which was effected on the 20th September, (The tactics of this operation are discussed later on.)

On the 21st the force advanced to Ploemeur, six miles from the place of landing, and four from Lorient, and drove back a small irregular force drawn up to oppose it.

On the 22nd the British moved to Lorient, and summoned the place to surrender, and on the 23rd the Governor proposed that the garrison should be allowed to march out with the honours of war, and be then permitted to disband. But General Sinclair asked for unconditional surrender, and in spite of his having no siege train resolved to besiege the town, and in this decision he was backed up by his engineer officers. Some guns were dragged up by the sailors and marines, and on the night of the 24th a battery was thrown up. It was found, however, impossible to keep up a continuous fire, owing to lack of ammunition, and Admiral Lestock had to point out that the fleet lay in a most exposed position, where in the event of a gale from either the West or South-West there was great risk of the ships going ashore; and the French, on the other hand, were now being reinforced in men, ammunition, and all necessaries from Fort Louis. Accordingly, it was resolved that the troops should be immediately re-embarked, which operation was carried out without molestation on the 27th and 28th. The fleet sailed on the 1st of October, and owing to bad weather was partly dispersed, but in spite of this the remainder landed without opposition in Quiberon Bay on the 3rd of October; but it was deemed rash to advance with the 2,500 men left, so they were re-embarked on the 11th of October, and the fleet returned to England.

"The only effect of this feeble and fruitless expedition was to exasperate the French people. To land a handful of troops without horses, tents, or artillery, from a fleet lying in an open and exposed roadstead like that of Quimperlé, at a time of the year when heavy weather was to be expected, and thus render a re-embarkation precarious, was a useless and dangerous proceeding not likely to distress the French, but almost certain to prove disastrous to the expedition."[1]

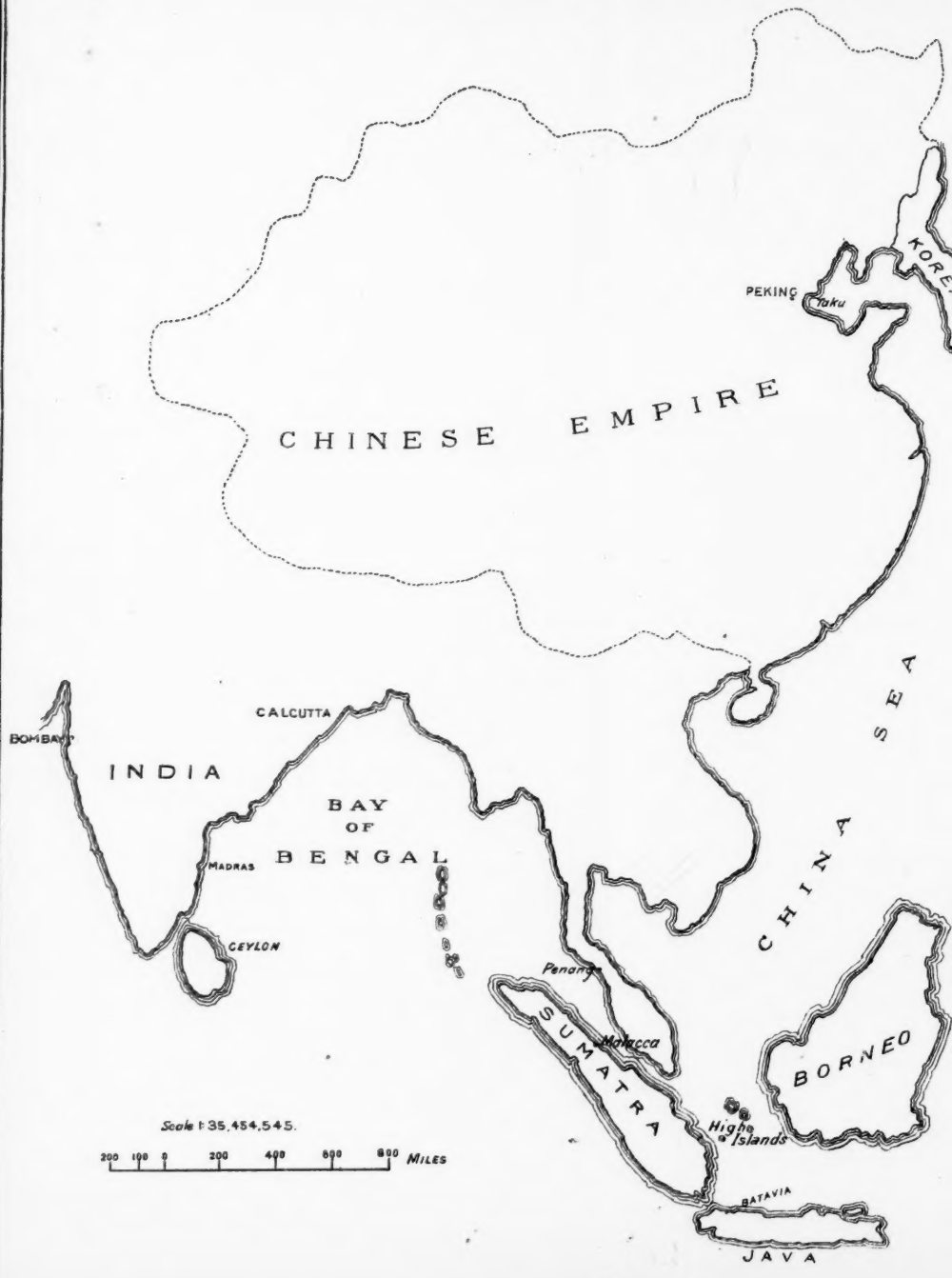
Expedition to Java, 1811.

See Map II.

The capture of Java in 1811 (an intermediate period) shows much more method, and marks the improvement which had by then been arrived at. It is interesting, too, as an example of the many successful enterprises which have been despatched from our Indian Empire. It was proposed in April, and the first division sailed on the 18th of the same

[1] "British Expeditions," Intelligence Branch, W. O., 1884.

EXPEDITION TO J



JAVA. 1811.

SEA OF
JAPAN
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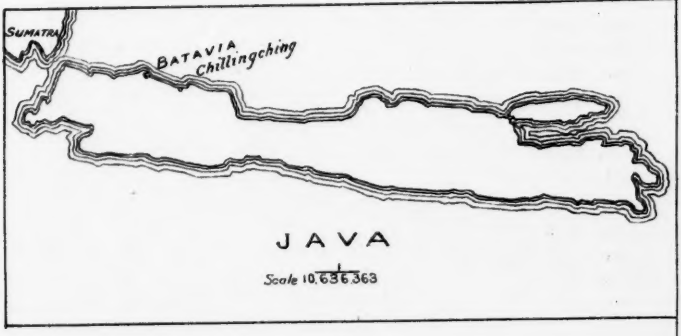
SUMATRA
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month, and on the 18th of May anchored in the Harbour of Penang, the first point of rendezvous.

The second division started six days later, and arrived on the 21st of May. A few days afterwards these moved on to Malacca, the second rendezvous, where they were joined by a division from Bengal, bringing the total number of soldiers to 11,960 officers and men, of whom 5,344 were Europeans. The 1st of June saw the departure from Malacca (where 1,200 sick were left behind) and the third rendezvous, the High Islands, was reached on the 3rd of July. Reconnoitring frigates were now despatched to rejoin the fleet off the Java coast, where the expedition awaited them from the 30th of July to 2nd of August, and eventually sailed without them. However, they soon rejoined, and reported that the village of Chillingching, about twelve miles east of Batavia, was the best place for landing.

Early on the 4th of August, the ships anchored off the mouth of the Marandi during the interval between the land and sea breezes, and weighing on the return of the latter, stood in, and before 2 p.m. were at anchor abreast of Chillingching. So complete had been the arrangements, and so well chosen was the spot, that before dark the effective portion of the infantry (8,000), of whom half were Europeans, landed without opposition, covered on the left by a 36-gun frigate, and on the right by one ship, three frigates, and the brig-sloops attached.

"The rapid approach of the fleet had prevented the enemy from ascertaining the intended place of landing in time to send a force thither to guard it. This being noticed by Captain Cole, he made the signal from the 'Caroline' for the advances of the Army to land immediately, then hoisted out his boats, tripped his anchor, and dropped the 'Caroline' nearer to the shore. No time was occupied in arranging the order of the boats, they being ordered to shove off when manned and filled with troops. His example being followed by Captains Elliot and Pelley, and the boats of the other men-of-war being sent to assist in conveying the troops, about 8,000 soldiers, with their guns, ammunition, and provisions, were landed in safety by 6.30 p.m. Soon after dark, the British advanced-guard had a skirmish with the enemy's patrols, who, but for Captain Cole's alacrity and promptitude in making the above signal, without waiting to complete the arrangement of boats, etc., as usual in such cases, would have taken post in a wood at the back of the beach, and might have occasioned great loss to the invading force."

The garrison of Java, numbering between 8,000 and 10,000 effectives, native and Dutch, were shut up in an entrenched camp, nine miles from Batavia. There were about 280 guns in the lines.

On the 8th August, Batavia was taken. On the 10th, after a smart skirmish, preparations for attack were commenced, and ground was broken on the 20th, within 600 yards of the works, the seamen as usual helping with the guns, and the marines replacing the many soldiers sick. On the 22nd the Dutch made a sortie, but at midnight on the 25th the works were carried by a combined assault, the Dutch losing 4,000 killed and 5,000 prisoners, and the island passed into the hands of the English, with

a total loss between the 4th and 27th August of only 156 killed, 788 wounded, and sixteen missing.[1]

The Egyptian War, 1882.

See Map III.

A successful modern expedition, involving the element of surprise in the seizure of a satisfactory base without serious opposition, is the Egyptian War of 1882. In that year England found it necessary to interfere in the internal affairs of Egypt, and in the last days of June and the first of July some preparations were commenced, but war was still doubtful. On the 11th July Alexandria was bombarded by our Mediterranean Fleet, because the Egyptians were evidently strengthening the defences of the town, and would not desist; and on the 13th July detachments of bluejackets and marines from the fleets occupied the town for police duties only. They were reinforced from Cyprus on the 17th July by a small brigade under Sir A. Alison, consisting of troops from the Mediterranean garrisons and a battalion of marines.

On 27th July it was definitely decided to send an expedition to Egypt, not to war against the Khedive, but to support him against Arabi Pasha, who, having control of the Army, carried the whole country with him in resisting our forces. Arabi had assembled under arms by the 13th September with some 100,000 men, but mostly very inferior troops.

On the 30th July troops began to leave England, and departed daily up to the 11th August, numbering on the whole 15,000 N.C.O's and men, with 5,000 horses, conveyed in forty transports.

On the 9th of August an Indian contingent, which numbered about 2,000, left Bombay in seven transports, and the East Indian Fleet had moved to the Suez end of the canal, whilst the Port Said end was controlled by the Mediterranean and Channel Fleets.

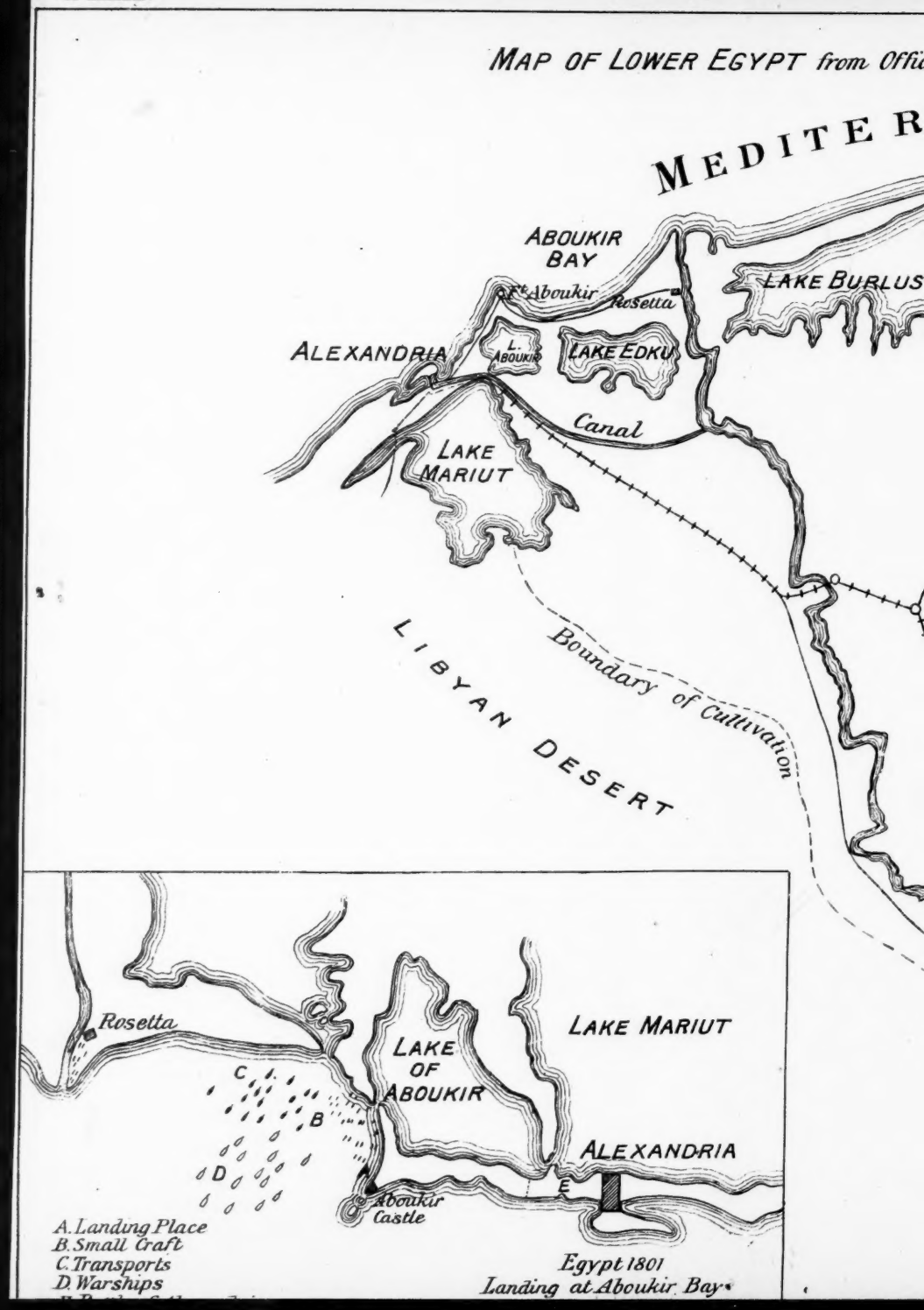
In addition to the land forces enumerated, there were nine battalions from Mediterranean garrisons and battalions of marines and of marine artillery.

The plan of campaign, as sketched by Sir G. Wolseley on the 3rd July, was an advance across the desert, with Ismailia as base, along the Fresh Water Canal to Cairo. It was then foretold that Arabi would stand to fight on the boundary of the cultivated ground, about Tel-el-Kebir. The occupation of Alexandria, forced upon us by the bombardment, in order to protect the town from destruction and restore order, was a departure from this plan, but was utilised from the 31st July, to deceive Arabi as to the true line of advance.

On the 20th August, most of the troops from Europe having arrived at, or off, Alexandria, the Suez Canal, including Ismailia, was seized by seamen and marines from the fleet, encountering a very slight resistance.

The operation of disembarkation was commenced at once, and on the 26th August the advanced troops had been pushed as far forward as Kassassin, after a few encounters. The period from this date to the 12th September was spent in concentrating the troops at Kassassin, and preparing for a further advance.

[1] Abridged from "James' Naval History," Vol. vi., pp. 26-39.


MAP OF LOWER EGYPT from Offi
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LIBYAN DESERT
Boundary of Cultivation
Rosetta
LAKE OF ABOUKIR
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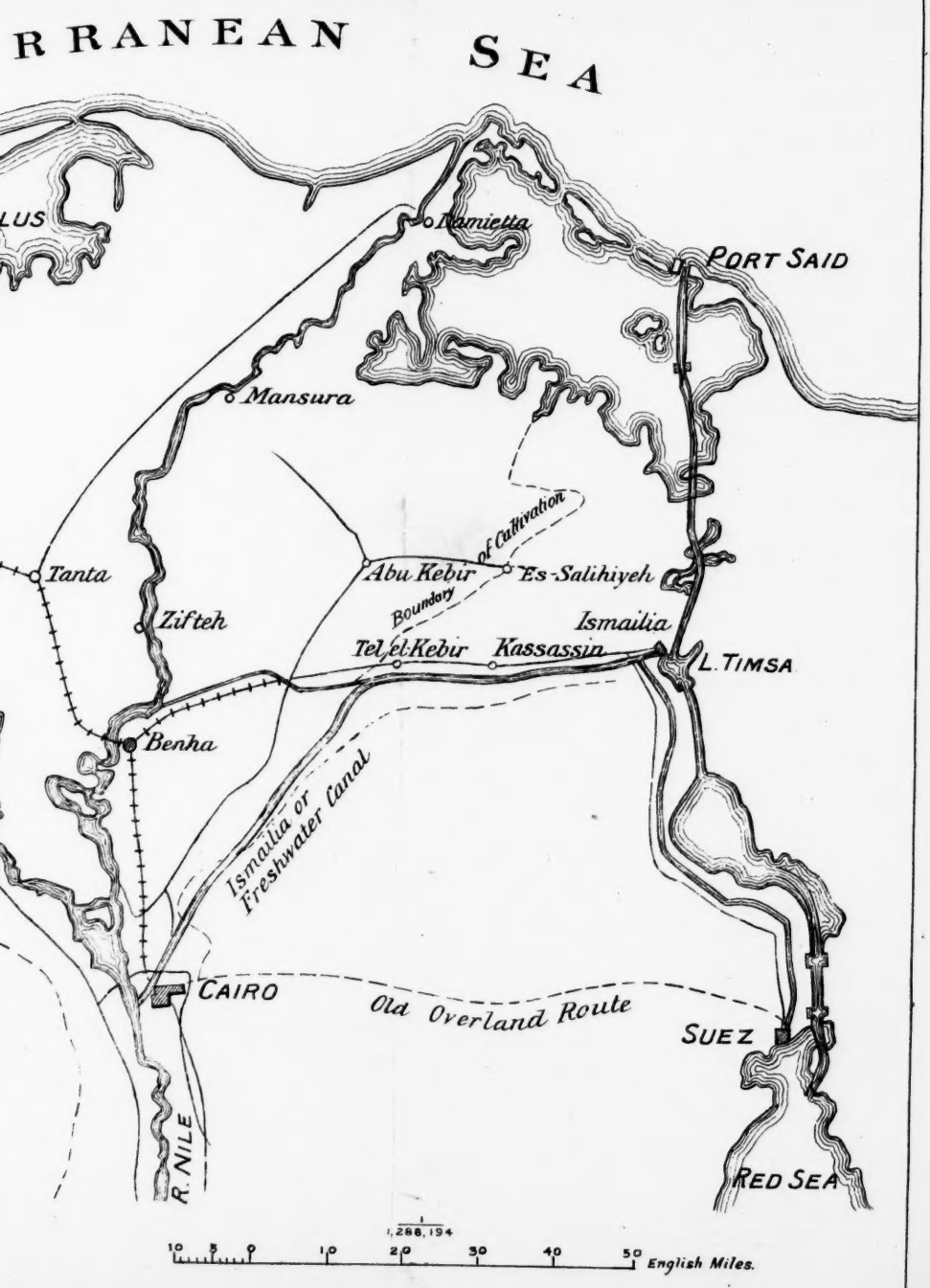
Aboukir Castle
A. Landing Place
B. Small Craft
C. Transports
D. Warships
Egypt 1801
Landing at Aboukir Bay

Official History of 1882 Campaign.



On the 13th, the entrenched position of Tel-el-Kebir, occupied according to Arabi's own estimation by 20,000 men and 75 guns, was taken by assault after a night march from Kassassin, and the Egyptian Army dispersed. The British assaulting force numbered 634 officers, 16,767 men and 61 guns, and the losses amounted to 9 officers and 48 men killed, 7 officers and 355 men wounded, and 30 men missing.

On the 14th September, Cairo citadel and Arabi surrendered, and the campaign was virtually over. On the 21st October, Sir Garnet sailed from Alexandria, and the three divisions had been broken up.

It must be noted that Arabi never suspected the movement on Ismailia till all had been successfully accomplished, and believed throughout that the Indian contingent was despatched merely to form a diversion, while the real advance would be made from Alexandria.

These three examples, treating as they do of an invasion of the country of a European Power, of the capture of an island forming an important colonial possession of a European Power, and of the invasion of a country defended by a semi-civilised Army, are very typical of our numerous expeditions. What is most noticeable is the larger numbers employed in the more modern instances, the greater method, and the increased rapidity of execution. There has been no important expedition of recent years which will fully illustrate the very latest developments, but minor wars are constantly bringing to notice fresh scientific appliances which will probably still further bring to the front the points noticed above.

Modern Changes affecting Strategy.

Those inventions which most affect strategy are due to the greater application of steam and electricity, and under these headings they will here be discussed. (The question of improvements in fire-arms is taken under the head of Tactics.)

The development of the steam-engine in the last hundred years has of all improvements had the greatest influence on our subject, both as regards the ship and the railway. The "Comet" was launched on the Clyde in 1812, and the Stockton-Darlington Railway opened in 1825, and with the numerous rapidly following developments the processes of war have been revolutionised.

With regard to the ship, a considerable number of the earlier expeditions in the table were greatly *delayed*, if not really *defeated*, by hostile winds, or the absence of any breeze. For instance, Marshal Saxe's intended invasion of England in 1744 failed because his fleet was becalmed off Dungeness. In September, 1795, Sir Ralph Abercromby was appointed to command in the Eastern Carribbean, but the new expedition then fitted out at home for the conquest of the Windward Isles was twice beaten back by gales (15th November and 3rd December), and did not arrive on its station till the 21st April, 1796. Hoche's famous and oft-quoted expedition to Ireland, towards the end of the same year, owed its failure as much to the inability of the ships to work up to the head of Bantry Bay against a contrary wind, as to the efficiency of our naval and military defences. With steam-power Hoche's fleet could have reached

secure shelter; Saxe's men would have rather profited by the calm weather than otherwise, and it would have to be a series of very severe gales which in these days could long detain British fleets and transports. Moreover, when once started, steam will give additional strength in enabling the fleet to keep its military convoy in hand, so that they may proceed together to their destination—unless the weather is to a most marked extent hostile—and at a rate that can be calculated beforehand with a fair degree of accuracy. Even the earlier steamships, at a date when sailing vessels were the rule, were of the greatest use in towing transports. In the transit from Varna to the Crimea in September, 1854, we were enabled to despatch our forces in a compact flotilla, propelled throughout by steam, every large sailing transport being towed by a merchantman, whilst our allies were obliged to impair the efficiency of their men-of-war by crowding their decks with soldiers, and, even then, had to cover the sea with sailing vessels of all sizes, which could only be kept together with difficulty, and in a most disorganised mass. Our advantage was also in part due to the far larger and better class of ships, which our vast Mercantile Marine rendered available; and it is possible that steam has been of the greatest use to the attack in the enormous development of commerce which has followed the introduction of the steam vessel, and therefore in the increase in size and numbers of ships which are now available as transports and supply vessels. Our relative position, too, in this respect, as compared with the other great Maritime Powers, has improved since the time of the long wars, and so far then progress tends to assist our power of attack.[1]

Increased mobility renders more possible the execution of such feints, or threatened landings, as are necessary for the accomplishment of an unopposed disembarkation; and will simplify a shift of base during the progress of a campaign—a process which is so often quoted as one of the advantages belonging to the country which possesses sea-power.[2] The fast cruiser will aid communication and reconnaissance, and the small steamboat is invaluable in the actual operations of embarking and disembarking. Even a few much despised gun-boats were of great value in landing stores at Peh-Tang in 1860,[3] and enabling us to complete our arrangements some days before the French, who had no steam-power to aid them. In 1882, the fast torpedo-boats were most useful as messengers in the Suez Canal.

Now also it is possible to use many ports of embarkation, and yet to combine the operations (aided by the railways and the telegraph). The increased size of the modern vessels adds to the health and comfort of the troops, and makes it possible for single transports to carry larger units—a tactical and organisation question of no mean importance. The shortened voyage permits of the arrival of men and animals in better condition for the march, and enables the food and water supply to be better regulated, and to be of fresher quality. In short, if every invention did as much as

[1] For actual figures see under Transport.

[2] *Vide* Hamley and Mahan on the Peninsular War

[3] "War with China in 1860," p. 100.

this one to increase the offensive power of maritime nations, they could view with great content the advance of mechanical ingenuity.

The comparative effect of the introduction of railways, is, perhaps, not so obvious, but their value in the "Minor Expedition," and all those of a larger class, is very considerable, both to the invader and defender. Their strategic use is similar to that involved in operations confined entirely to land, namely, more rapid mobilisation and concentration, and the simplifying of the supply service.

The principle to be borne in mind in considering their *concentration* value is, that the troops once entrained can travel over great distances in exceptionally short periods of time as compared with formerly; but it must not be forgotten that the operations of entraining and detraining require considerable forethought, time, and space, so that for short distances troops can move quicker in marching by road. For this reason railways are of little tactical importance, and many entraining and detraining stations are necessary, and many lines of rail must be utilised, for the rapid movement of a large force. It is of minor importance that additional lines of rail make a large detour to arrive at the point of concentration, for the time spent on the journey is small compared with the time for entraining and detraining. To avoid delay, it is only necessary that the detraining stations should be equal in number and accommodation to the entraining ones.

Remembering the above points, it will now be simple to compare the relative changes as regards offensive and defensive, which the introduction of railways has brought about. For the defence it must be conceded that, all arrangements having been concluded during peace, the railway will have immense value in mobilising the defending force on a known threatened point. But it will be a matter of skilful strategy on the part of the attack to conceal the actual point of landing, thus this resource can only be counted on as supplying reinforcement to the first resistance. After the landing has been effected, the supply service may be simplified to both sides by the use of railways, but the actual possession of lines coming from the interior of their own country should throw the balance of advantage on the defence.

Taking the Crimea as an example, our intention of attacking Sevastopol was so little concealed that, with a good railway service into the peninsula, the Russians might have concentrated there a force large enough to have overwhelmed us from the outset. Supposing, however, this had not been done (unless we had landed sufficient troops to invest the place), with the railway service from the interior intact, the ease with which the vast resources of Russia could have been drawn upon would have rendered our task hopeless—a task which only succeeded because reinforcements and supplies to the fortress had to traverse an arid desert, quite impassable during the winter months. On the other hand, the construction of the railway from Balaklava to our camp so ameliorated the condition of our troops, as to show that if it had only been done in the first place, it would have spared to them the cruel sufferings of the Winter of 1854-5. The forethought

which, in fitting out the expedition of 1882 to Ismailia, added engines and rolling stock to the supplies, facilitated the transport service to the front in an incomparable manner.

But the great attack value of railways lies in the fact that they make surprise more possible. For instance, in 1805 Bonaparte had to concentrate his Grand Army of invasion in camp about Boulogne; and the other corps destined to further the principal movement by diversions in different directions had likewise to be concentrated round their respective ports of embarkation. Now, all this was intelligence of invasion in itself; but to-day the mass of invading troops might be mobilised inland, and from thence despatched to different points of embarkation in a very short time, when everything was ready for the expedition to start. Not only would this have presented little difficulty to such an organiser as Napoleon I., but would have simplified matters in not encumbering the ports of embarkation with useless mouths to feed—one of his greatest difficulties in the then state of French communications with the interior. It is, in fact, the greater rapidity with which an expedition can be despatched that gives value from the attacker's point of view, and is greatly allied to what has been said of the steamship, and what is about to be said of the telegraph. In 1882 many preparations were made at Aldershot without calling attention to ports of embarkation, and any large inland camp where troops are constantly being concentrated for exercise, will always serve in a similar way for the preparation of secret expeditions, provided they are efficiently connected by rail with the seaports.

The use of the telegraph has probably been sufficiently hinted at before, to make clear to what great uses it can be applied.

To the attack, it will permit of a combined descent from different ports, so timed and started as to ensure simultaneous arrival, while the secret of the true point of destination has been kept by one central authority until a very short time before the departure.

The combination effected by the King of Prussia from Berlin in the campaign of 1866 in Bohemia, shows how much can be done in this direction, as do also our own experiences in our later wars. In 1878, when we were on the verge of war with Russia, the Russian Volunteer Fleet assembled at Rio de Janeiro, which was in telegraphic communication with Europe. Now at that time, with the Cape of Good Hope, St. Helena, Ascension, etc., we had no telegraphic communication. So that it would have been quite possible for the Russian Fleet, starting directly they heard by telegraph of the declaration of war, to have entirely taken by surprise our African coaling stations.

For the defender, the telegraph may permit of friendly warning concerning the preparation of a hostile expedition, coming through most indirect channels. Coastguard stations in direct telegraphic communication with central authority will be able to convey the earliest news of a coming armada, perhaps flashed ashore from fast cruisers in the offing; and such news having been received, the telegraph will greatly assist mobilisation and concentration.

The power of modern journalism, aided by the wire, is a matter which neither side can neglect, so great care must be taken to conceal all steps of preparation which will give information to the enemy, and a Press censor is necessary on the staff of every expedition. In August, 1882, the busy correspondents of European papers unwittingly served our purpose in taking Alison's demonstrations seriously, and, in censuring the feebleness of our attacks, played our game, by helping to draw Arabi's attention from his true danger.

The electric light is of considerable value in signalling from ships at sea, and so improving communication. It will also permit a great deal of preparation work to be done at night, which formerly was almost impossible. It is a source of safety in showing up night attacks and guarding against the torpedo, and is inseparable from a properly laid mine field. In the beginning of July, 1882, Sir Beauchamp Seymour was able to discover the nightly attempts of the Egyptians to place the fortifications of Alexandria in an efficient state of defence.

Electricity has a marked effect in developing the power of the submarine mine, allowing the charge to be fired instantaneously, either automatically or by observation on the passage of a hostile ship, while still rendering the mine, or line of mines, perfectly safe to be handled, or passed by friends; thus rendering most simple the defences of a narrow channel or entrance, unless subject to elaborate countermining work on the part of the attack. In this way, many ports or harbours which could formerly be seized at once to serve as the basis of expeditions, will now be barred.

Miscellaneous contrivances now worked by electricity and steam will effect the expedition by simplifying the works of preparation and organisation. On the side of the defender they have so assisted sea-defences, that it will be stated here, as a fact to be proved later, that the successful attack from the sea upon a well-defended fortress, is almost an impossibility for the most powerful of modern fleets. This is of less importance, since no country can afford to fortify every yard of her coasts, or would think of committing the strategical mistake of tying down a large portion of her armies to such garrison duties, and so arriving at the old error of trying to be strong everywhere on a long defensive line—an attempt which always ends in being weak throughout, on account of the loss of mobile force.

Since the Napoleonic Wars, in addition to the growth of commerce and the great expansion of our empire, another matter has arisen greatly altering all military problems, and that is the vast growth of Continental Armies; consequently, any invading force of ours on the Continent of Europe would be liable to be outnumbered by more than twenty to one. Such odds as six to one we were able to face in the Peninsula, and later, in the Crimea; but on these occasions we had numerous allies, and the enemy was hampered by the difficulties attending on long lines of communication.

The other general improvements of importance will be referred to under Tactics and Organisation.

Now that the necessary corrections to be applied to past examples, in order to render their strategic lessons fit for future use, have been discussed, the way is clear to consider what these lessons are.

Command of the Sea.

It has been said that strategy is the art of guarding one's own communications while threatening those of the enemy, and that for every glance a General throws forward towards his enemy he throws two to the rear along the line connecting him with his base of supplies. It follows, therefore, that for sound strategy, both communications and base must be as safe as military science can make them.

In the case of landing an expeditionary force on an enemy's coast, the primary base is a port, or series of ports, belonging to the Power which sent forth the expedition, and the only lines of communication are the ocean pathways, along which supplies must pass from the base to the place of landing. For the safe-guarding of such lines, a force is necessary which shall ensure the passage of ships to and from the Army, bringing supplies and reinforcements, and taking back sick, wounded, and prisoners.

It may happen, however, that the communications are in no way endangered, and do not therefore require guarding, as would be the case in the first class of expeditions. For in a mere enterprise from a fleet or armed vessel, the communications are so short, that success depends mainly on tactical conditions, and in the case where the foe is in a state of barbarism, or semi-civilisation, probably a hostile Navy has no existence, and no danger is run unless the attacking belligerent is in any way threatening the interests of a naval Power, or by exposing great weakness excites the cupidity of any such Power. Practically all the small wars of recent years are of these kinds, and have required no great naval strength to support them.

But in the more important cases, even if the Navy of the particular country threatened is in itself weak, yet the operation will probably so interest naval Powers that the greatest precautions will be necessary (at any rate at first), and the forces involved will be so considerable that it would never do to run any risk of their being cut off. For instance, in 1882, the Mediterranean, the Channel, and East Indian Fleets were all drawn to the scene of action, although Arabi had no naval force with which to threaten us. An examination of past expeditions shows that only in exceedingly rare cases has a maritime expedition of any magnitude been attempted in Europe, or against a formidable Power in any other Continent, without such security. In the Crimea, the Allied Armies were accompanied by powerful fleets of France and Britain, and were retained in the Black Sea, although the Russian Fleet in those waters was shut up in the Harbour of Sevastopol by means of the sunken chain of men-of-war at the mouth of the harbour; and other Russian ships were fully accounted for by our Northern Squadrons.

Also in those cases where no such security existed, the result has ordinarily been failure. Napoleon's campaign in Egypt and Syria, though brilliant in itself, could have no real success after the battle of the Nile; and it was the allied French and Spanish Fleets which proved the greatest obstacle to our land forces in the War of American Independence.

It is, of course, possible that a large expedition, landed in a rich and fertile country, may subsist for a time, if it can continue to advance, and so open up fresh fields of supply; but unless it can rapidly achieve some decisive result, it must eventually capitulate to the Power which commands the sea. The French rule in India and Egypt, the Dutch Colonies at the Cape and elsewhere, and most of the Spanish possessions, have all in turn suffered because aid from without was denied them by our fleets. Napoleon in 1805, if he had obtained the forty-eight hours' command of the sea which was all he asked for at one time, might possibly have reached London with his 100,000 men before he seriously lacked food, stores, and reinforcements, but *one serious* check would have meant ruin and annihilation; and to-day it would be difficult to point to any other objective where such success would be possible.

It is not absolutely necessary that the fleets of the enemy and his allies should be completely driven from the seas, for a minor degree of security may be provided by convoys protected by a naval force, large enough to make them reasonably safe. We were able to retain Gibraltar during the long siege (1779-82), because from time to time British Fleets threw supplies and reinforcements into the place. Gibraltar, however, had great power of resistance in itself; but small islands have, in war, always fallen to the Power which commands the sea. Of this truth the Windward Islands are the most telling examples. St. Vincent and St. Lucia were taken from the French in 1761 during the Seven Years' War; but in 1779 when our fleet in the West Indies had been weakened by the expedition to Georgia, the French re-captured St. Vincent. In 1803 St. Lucia, which had been twice previously restored to France on the conclusion of peace, was seized again by England immediately on the declaration of war.

September 22nd, 1894, Japan, in asserting a naval superiority over China, appears to have added another testimony to sea power, and similar in kind to that deduced from Hannibal's invasion of Italy; for reinforcements to the already over-matched Chinese in the Korea can only now safely arrive after a long march, which the approaching Winter will render practically impossible.

It is much to be regretted that the present unreliable information from the seat of war prevents this latest example from being fully utilised.

Objectives.

As a rule the objectives of our expeditions have been selected by the Government for political reasons, and the General chosen to command has been merely consulted as to the best method of carrying out the design. Indeed, the only province of strategy is to point out the military advantages and disadvantages of the object selected, and to choose the

point of departure and the route. The climate must be carefully considered, for if a bad climate is not an insuperable objection, at least steps should be taken in the preparation to guard against its evils where possible.

A port (or ports) of rendezvous may require selection, and there must be suitable places for landing, while coast fortification must be avoided unless the expedition is a very strong one, *i.e.*, can bring exceptional superiority of some kind or other to bear, to cover the landing. It should be capable of proof that the objective selected will harm the enemy most, at the least cost and danger to ourselves. The table shows how varied have been the ideas of arriving at this result in past years.

It should, at least, be left to the commander to state what strength will be required to attain the object. A case of utterly inadequate forces being employed was Admiral Sir H. Popham's expedition to the Rio de la Plata, in 1806-7, but here the whole responsibility rested with the Admiral. He had been sent to the Cape of Good Hope, had fulfilled his mission, and now selected a new objective with the forces at his disposal, without any communication with the home authorities, for which he was afterwards censured by them. In his defence it must be stated that communication at that time was difficult, that he believed, probably, that the opportunity might pass, and that he had been deceived by rumours of assistance from disaffected inhabitants. This last is a fruitful source of failure in expeditions of all sizes. Our efforts to aid the Royalists in France and elsewhere, in the Wars of the French Revolution, and the attempted French invasions of Ireland during the same period, are noted instances of the mistake in question; as also our invasion of Georgia in the War of American Independence, and the Southern incursion into Maryland in the Civil War. Sympathy from inhabitants may well exist, without their being able or willing to add to the substantial force of the invader, unless he is strong enough to be independent of their aid until such time as their powers can be soundly organised. Natural jealousy of the foreigner, fear of terrible punishment in case of failure, and the misunderstandings natural to forces hastily raised and poorly disciplined, have been sufficient reasons to render such aid abortive in the past; and the more careful training now required for the manipulation of modern weapons, and the high state of organisation necessary for modern methods of warfare, will render it equally so in the future. The slight efforts of the Franc-tirailleurs, or even of the Republican Armies in 1870-71, when called on to meet the trained forces of Germany, will illustrate this latter point, and in these cases they were undoubtedly backed up by the whole strength and goodwill of a great nation.

Captain Mahan suggests that to supply insurgents with arms and money in order to aid them to create a diversion, is correct in principle; and no doubt that course was, to a certain extent, useful to us in the Peninsular War, though the supplies then granted were ordinarily wasted by criminal carelessness and extravagance.

Doubtless it is frequently of advantage to reinforce the insurgent garrison of a coast town or fortress, where by so doing the defence may

be prolonged (Toulon), or the siege raised (Cadiz); for in these cases, in the last extremity the troops may be withdrawn with comparative certainty. If the inhabitants are fairly committed to the defence, they will ordinarily fight with great vigour, and also with much confidence, if they know that transports are provided to carry off such as may wish to leave when resistance can be no longer protracted. Besides the instances of Toulon and Cadiz, we were frequently able to render assistance of this kind during the Napoleonic Wars in the Peninsula, in Italy, and at various other places—most notably at St. Jean d'Acre in 1799.

Apart from any such aid, the capture of important defended harbours and dockyards is always a probable objective to a Sea Power, either to destroy shipping or to strike at an enemy who cannot be touched elsewhere. In these attacks, experience has shown that the Navy ought never to act alone, but should be accompanied by a military expedition (Charleston, 1863). Indeed, after the command of the sea has been obtained, and the enemy's ports blockaded, there is frequently no other way of employing to advantage the armed forces of a country possessing a numerically inferior Army.

It only remains to add that objectives should be the outcome of a continuous imperial policy, which in our case may be said to be the control of the trade-routes, the enlargement of our commercial areas, the consolidation of the empire, and the safeguarding of our position as one of the great Powers. The error which the past teaches us to avoid is, *the sub-division of effort, which an Army so small as ours can never afford; to avoid, in fact, the errors of a Government which fitted out a Walcheren Expedition when troops were urgently needed to reinforce our minute force in the Peninsula, and which, while acting in many places at once, was strong nowhere.*

Strategic Surprise.

From the strategical or tactical standpoint it seems fairly clear that surprise is an important ingredient of success. It is one of the advantages naturally appertaining to the offensive in all warfare, but more especially in the case of a "*landing expedition.*"

Our great successes at Copenhagen (1807), in the capture of the Island of Curacoa, and in Egypt in 1882, etc., were greatly due to taking the enemy unawares. If strategically it was necessary in the past, it is more than necessary now, when rapidity of communication and improved systems of mobilisation will make it simple for an enemy to rapidly collect a force to oppose a known movement.

In 1854 we took slight pains to conceal the fact that Sevastopol was our object, though some mention of Odessa was made, and a more active opponent than Mentschikoff might have prepared such forces as would have made the invasion almost impossible.[1]

Such small military posts as were the Windward Islands in the Seven Years' War, and in the War of American Independence, are always liable to surprise and capture by a fleet expedition. The "Minor Expedition" has

[1] "Kinglake," Vol. iv., p. 134.

owed much of its success to the possibility of its concealed preparation, and such great expeditions as we may in the future engage in, would owe their importance to being thrown unexpectedly on the line of communications, or in the rear of the forces of a Power already deeply engaged with an enemy in front.

The difficulties of surprise to-day have been more or less discussed before. To muzzle the Press, or deceive the press-men equally with the enemy, and to make great preparations without giving information to spies, are no easy tasks. We shall not always have to deal with an enemy of the calibre of Arabi, and even in that case it was taxing General Hamley's loyalty to a high degree in sending him to attack the Aboukir Forts on the 19th of August, in ignorance of Lord Wolseley's real intention; and the difficulties of supply arose because the commissariat department could not be admitted to the secret. Yet it is indispensable that the secret object should be kept in the mind of the General alone, and those few of his staff whose help is absolutely necessary. Alternative objectives, if not seriously considered, may have to be published to the world to cover preparations.

Constant naval and military manœuvres offer some screen to preparations made in time of peace. The announcement of manœuvres on a large scale no longer causes alarm, but it may provoke watchfulness on the part of an adversary who has some suspicion that he may be the object of attack.

The reputed attacks on the Cape in 1878, and on the North of India in 1885, planned by the Russians show that other nations are considering the question, and as to the morality of *hostilities without declaration of war*, there is plenty of precedent for the Japanese action in sinking the "Kow Shing" during the existence of a nominal state of peace. It is a species of immorality which the practice of strategy among all nations has sanctioned.

As a stroke of this kind telling against ourselves may be quoted the surrender of Cornwallis in the York Town Peninsula in 1781, which was principally brought about by the concealed movements of the French Fleet under de Grasse, and of the American troops, for it was impossible to determine whether New York or York Town was their true objective; and also part of the English Fleet had to be left behind to protect the West Indies.

Reconnaissance.

It is evident that good and early information is essential for sound strategy in every expedition. It has been seen that the ancient method of obtaining this was to send a few fast ships in advance of the flotilla, and then to lie by to await their report. Modern ideas require something more deliberate, require indeed that all strategic reconnaissance should be completed before the expedition is despatched (Major Tulloch had reconnoitred the field of operations in Egypt as early as February, 1882); therefore, this is dealt with in greater detail under Organisation.

Supply.

Similarly with the strategic question of supply. One point alone on this head will be enlarged upon here, and that is, an explanation of the apparently extraordinary inactive interval in the Egyptian Campaign between the 26th August and the 12th September. A similar interval will nearly always be found to precede every expedition involving an advance into a hostile country not abounding in native supplies. Colonel Maurice illustrates thus the difficulty causing the delay. Suppose A to be the place of landing, B, C, and D the necessary advanced magazines of supply, and that the scarcity of supply from the country is such that the main force cannot move to D, or beyond it, until the magazines are filled up; the first operation then will be to fill B, but if the whole force move there at once it will be a matter of great difficulty to accumulate provisions or to push any on to C and D, with a transport just equal to the ordinary supply of the Army. Thus it would be better if no troops moved from A till all the magazines are filled. However, these must be protected from the enemy, so some troops (as few as safety will permit) will go forward to D, which should be so close to the enemy's forces that a few marches will enable a decisive blow to be struck. In this way alone can the "Minor Expedition" in semi-civilised, uncultivated countries be carried out expeditiously—well illustrated in Egypt, and in the Magdala Campaign. Meanwhile, the best place for the commander is either at home, expediting the departure of stores and troops, or at A with the main body—positions which will equally bring on him the censure of the ignorant.

After Landing.

The ordinary course of strategical operations after the force has once been firmly established on the enemy's shores, is outside the special scope of this essay, except with regard to that part of the work which has reference to supply and communications with the mother-country or over-sea base. The retreat must be secured, and the great thought of the commandant at the base of disembarkation, as soon as the immediate supply of the Army has been got into working order, is to make arrangements for rapidly re-embarking troops. The senior naval officer will naturally take steps to cover such an operation, and any failure on his part to this will result in the imprisonment of the whole army. In spite of the brilliant generalship of Napoleon, the French Army of Egypt were hopeless prisoners from the time that Nelson destroyed their fleet at the battle of the Nile. Sir J. Moore was only able to save his forces in 1809 by shifting his base from Lisbon to Corunna, by fighting a successful battle with his back to the sea, by the arrival at the last moment of the transport, and after destroying vast quantities of stores.

This again introduces another fact of great strategical importance in this kind of expedition, and that is, the possibility of the shift of base. It is probable, considering the strategical and tactical advantages of surprise, that in most expeditions the landing will only be possible on the open coast, for all suitable ports and harbours will be closely watched,

and more or less prepared for defence.[1] Therefore, it will be essential for long operations, such as the Crimea, to move the base to some suitable harbour as soon as one can be secured; or perhaps it is better to invert this order, and say that the first objective of an expedition after landing, if not before, will be the capture of a suitable port or harbour to serve as a base of supply. This was the procedure followed in the capture of Minorca in 1781 and 1798 in the Crimea, in the expeditions to Egypt in 1801, by the French in Algiers in 1830, and generally in all such operations. The capture of such a place may entail a more or less lengthy operation, say from 24 hours in a practically undefended place on the land side, to a fortnight in the case of a port with provisional land fortifications. (The siege of a fortress harbour—a most probable main objective for us—might extend to a couple of years, as in the case of Sevastopol, and is therefore beside the question.)

A harbour suitable for such a purpose should be capable of receiving ships of deep draught, with conveniences for unloading, or with possibilities for preparing such conveniences, should give shelter from ordinary gales, and should be capable of being prepared for defence. The place will require a suitable garrison, if like Balaklava it is not covered directly by the Army. As the campaign progresses it may further be possible to shorten the communications by changing the port of supply to a harbour nearer to the Army, as was done in the Peninsula; or the whole line of operations may be altered, as McClellan did in his famous flank march from the Pamunkey to the James River in the York Town Peninsula; or a new line of retreat may be established, as in Sir J. Moore's case. In all these eventualities the new port will require to answer the same requirements as mentioned for the primary port of supply.

Main Strategical Requirements.

The main strategical requirements, then, are:—Communications well guarded by the Navy, a sound and well-reconnoitred objective, concealed preparation, effective surprise, and a sound system of supply when landed.

III.—TACTICAL LESSONS.

This branch of the subject is commenced similarly to the last, by examining how the landing in the expedition to Lorient was effected.

Example 1.—The Landing in Quimperlé Bay, 1746.

See Map I.

On the 19th September, 1746, the fleet, as previously stated, anchored in Quimperlé Bay, three leagues from Port Louis and rather more from Lorient. The French were entirely surprised, but by giving an immediate alarm, some 3,000 troops of sorts were assembled to oppose the landing, which took place at daybreak on the 20th September.

[1] It must, however, be clearly understood that a landing would on no account be attempted on an open beach if shelter can readily be obtained, on account of the danger and interruption likely to be caused by the wind rising even to a slight degree from an "on-shore" quarter, whilst a gale would postpone the operation altogether. These delays, to a more or less degree, happened in nearly all the examples quoted below.

To cover this disembarkation, three 40-gun ships, two sloops, and some small vessels moved close in shore, and kept up a fire for some hours, but the defenders retired behind rising ground, so little damage was done. Meanwhile, the boats containing the troops, pulling backwards and forwards seeking an opportunity to land, were somewhat annoyed by two six-pounders firing grape. A feint was at length made towards shore, and the French immediately drew up to dispute the landing, but "as soon as the General saw them in motion, he made a signal for the boats to pull to leeward, and by this manœuvre succeeded in landing 600 men about half-a-mile nearer Port Louis, before the French could get into position to oppose them. The landing once effected, the enemy fled in all directions." In the afternoon, the disembarkation being completed, the force moved to Guidel. The same evening the marines were landed to protect the guns, and preserve the communications, bringing the total to 4,500 men.[1]

A very simple pattern of tactics in such a matter as an opposed landing. Four thousand five hundred men easily accomplished a disembarkation in the teeth of a force, two-thirds the strength of their own, though it must be remembered that the French were a motley crowd, hastily collected.

Example 2.—THE LANDING IN ABOUKIR BAY, 1801.

The landing of the Egyptian Expedition under Lord Keith and Sir R. Abercromby was a more serious matter. On the 31st January, 1801, after having stopped a short time at Minorca and at Malta, the bulk of the British forces anchored in the harbour of Marmorice in Asia Minor. Here it was greatly delayed, but the time was well spent in practising embarking and disembarking. There were there about forty men-of-war and a hundred transports, having some 16,000 men on board, while the number of French troops at this time in Egypt was some 21,000, under General Menou.

Eventually the fleet brought up in Aboukir Bay on the 2nd March, but too late in the day for the disembarkation to be proceeded with. The operation was then further delayed by bad weather which lasted till the evening of the 7th, when preparations were instantly commenced. At 2 a.m. on the 8th, the troops and sailors began to "man and arm" boats, and at 3 a.m. the signal was made for these to rendezvous near a sloop anchored about a gun-shot from the shore, but the distance of the further ships from this point was so great that it was not till 9 a.m. that the dash could be made.

The instructions to the boats were as follows:—"Boats to be at least 50 feet apart, and take distance and dressing from the right, centre, or left, as ordered; to be arranged in three lines. The number of boats employed was 150, each carrying fifty men, exclusive of the crew."[2] The guns were so carried in the launches that they were on

[1] "British Minor Expeditions," p. 8.
[2] "Staff Duties," p. 183.

shore and in action as soon as the infantry. Six naval officers and the transport agents directed the movements, while the troops were under Major-General Coote.

The flanks were protected by some small gun-vessels, sloops, and armed launches; but the fleet could not take part in the operation owing to the shallowness of the water close inshore, and the limited range of ship's guns at that period.

The boats, which contained about 7,000 British, composed of an infantry division with Marines and Blue-jackets, advanced in line at a given signal. The force which the French were enabled to bring to oppose them consisted of some 2,500 men under General Friant, who, with great judgment, had stationed a part of them with fifteen pieces of heavy artillery upon an almost inaccessible hill, commanding the whole space of disembarkation, and the others with field-pieces and mortars in the different excellent positions which the ground afforded.

"No sooner did the boats arrive near the shore than a heavy fire of grape-shot and musketry from behind the sandhills seemed to threaten them with destruction, while the castle of Aboukir on their right flank maintained a constant and harassing discharge of large shots and shell; but the ardour of the British officers and men was not to be damped. No moment of hesitation intervened. The beach was arrived at, and a footing obtained; the troops advanced, and the enemy was forced to relinquish all the advantageous positions he had held. The boats returned without delay for the second division, and before the evening of the 9th the whole Army with a proportion of stores and provisions was landed."[1]

A detachment of 1,000 seamen under Sir Sydney Smith formed part of the landed force, their duty being to drag the guns up the heights—a service they performed with their usual alacrity and perseverance, and in which and in disembarking the Army they lost twenty-two seamen killed, and seven officers and sixty-three men wounded and three missing; these added to the Army losses gives a total of 124 killed, 585 wounded, and 38 missing; small numbers, when the hazardous nature of the operation is considered. The French state their loss at 400 killed and badly wounded, and they left eight guns in our hands.

Following the usual precedent, the next move was on a port to serve as base, namely, Alexandria, which was next attacked.

Example 3.—The Landing in the Crimea, 1854.

The plan in the Crimea was similar, indeed was based on this, differing in the facts that the inshore squadron could approach so closely as to cover the landing, and, more important still, that it was not resisted. The distance of the transports from the shore varied between 600 and 1,400 yards, and were so arranged, and the boats so filled, that the relative position of each company on its way to the shore corresponded with that it would have to take up when formed upon the beach. The boats, as before, advanced with a rush at a given signal,

[1] "Naval History," Vol. iii., p. 100-9.

a procedure which naturally develops into a race for the honour of being first to land.

The infantry were chiefly in the ship's launches, towed by the pinnaces and smaller boats. By 3 p.m. 14,200 men and two batteries of artillery were landed; but now the surf began to rise, and although before midnight some 26,000 men were thrown ashore, yet they were absolutely cut off by the sea from the fleet for at least twenty-four hours.

Example 4.—The Landing of the French in Algiers, 1830.

Another landing on an open beach, important because it was on a large scale, is that of the French in Algiers in 1830. The resistance was slight, and easily overcome, but some 41,000 men were disembarked from 377 transports in two days. It is noteworthy that all attempts at landing were rendered impossible by the weather for more that a fortnight, and it was attempted at last under the slight shelter of a small peninsula called Sidi Farong, about 11 miles west of the Port of Algiers; also that 230 special boats for landing troops were carried.

Improvement in Fire-arms and their Influences.

These examples, then, roughly indicate past methods, but science has even more affected tactics than strategy, and it is only a very few of the broadest principles which are of use to-day. The great change wrought in tactics is nearly entirely due to the improvement in fire-arms. This improvement has been continuous and gradual through the hundred and fifty years, from the smooth bore of the 18th and 19th centuries, which looked on 100 yards for the musket, and 250 to 300 yards for the cannon as the limits of effective fire, through the various stages of evolution of rifled weapons to an improved breech-loader, which has extended the ranges of effective fire of artillery (movable armament) to 5,000 yards, and of infantry to 1,000 yards. And it is not only in range and accuracy that guns and gunnery have improved, but also in rapidity and death-dealing power generally. The Q.F. gun, and the automatic machine-gun, will also be most deadly in the hands of the defenders of a coast line; so much so, that it seems an almost hopeless task for a force to land by means of open boats in the day-time in the teeth of an opposition, well organised and well posted for defence, unless in vastly superior numbers, or after a most careful preparation by artillery fire, though Admiral Colomb appears to think differently.[1]

Smokeless powder, again, is in favour of the defenders, and will prevent preparation being made under cover of a smoke-cloud, unless this is artificially prepared.

As in fighting ashore, a night attack, with careful preparation, will be possible; but weather and organisation must be perfect for the operation to be a success. If the position ashore has been prepared with any care, it is possible that electric search-lights may be amongst the other appliances which modern science has added to the defence. It is certain that they will be carried by the ships, and that, therefore, the

[1] "Combined Military and Naval War Operations" p. 28.

movements of the defenders may be constantly watched. An attempt in a fog on a calm day presents a similar problem to the night attack, but with greater difficulties. All this, however, assumes that it is necessary to attempt to land the invading force at a particular point, and that the defenders have had time to assemble to oppose the movement. Ordinarily the attempt will be made at an undefended point, owing to the wide choice open to steamships, and the only fear is that the operation will be interrupted. In case of a lodgment being made ashore, the advantages of the weapons will pass to the side of the invaders, and it should, as a rule, be possible to reinforce them more rapidly.

Disembarkation Interrupted by Weather.

The worst fate that could happen is for the operation of disembarking to be interrupted by weather, and so have the people ashore cut off from all aid. This happened in the expedition in 1798, to destroy sluice gates at Slykens, near Ostend. On arrival off the coast, hearing that Ostend was only held by a small force, the operation of landing was commenced at 3 a.m., in spite of the threatening aspect of the weather; but at 9.30 a.m. the sea was too rough to allow of more men being put on shore. At 10.30 the sluices were destroyed, but the 1,400 men ashore were entirely cut off from the ships by the weather, and the next morning, after a sharp action, were obliged to surrender to the French troops which had assembled. Had the fates been a little less propitious, a similar misfortune might have befallen the first troops landed in the Crimea!

Procedure in Opposed Landing.

Supposing it should happen that a place selected as being particularly suitable for a landing is defended by some hastily mobilised force, and it is thought necessary to land in face of this opposition, the main lines on which to act would probably be the same as of old. The transports will be anchored in lines as close to the shore as possible, those containing the troops first to be landed in the inner line. "Large vessels, if merely anchored, require 400 yards in which to swing; but if moored, 300 yards. Opposite a beach length of 1½ miles, therefore, only some seven transports could be anchored or nine moored." "The second line of transports would be about 400 yards outside the first line and other lines at the same distance apart."[1] The infantry will be carefully "told off" to boats, so as readily to form tactical units ashore. "No more than forty men to be put in each boat,"[1] as every boat will require its full complement of seamen. It must be remembered that the increase in size of transports, although possessing many advantages, has the disadvantages that the gangways are fewer, and the ordinary number of boats carried in the Merchant Service is entirely inadequate, so that special boats must be provided.[1]

The boats of the first attack will now be formed up (after a careful artillery preparation from every naval gun which can be brought to bear),

[1] "Staff Duties," pp. 182, 180, and 88.

not in "line abreast" as formerly, but in many columns "line ahead," each column being towed by a steamboat with a Q.F. gun in her bows. These steamboats will not touch the shore, hence the necessity for blue-jackets to pull each boat to the land. As many of the orders for landing as possible should be issued some days beforehand, so that all may be well acquainted with their duties. The troops to carry out the dash ashore will only take with them what is absolutely necessary for the first few hours. Cavalry are useless in the first line, but may follow shortly if the movement is successful, but it must be remembered that the difficulty of landing them is very great at any time, and that the horses will be quite unfit for hard work if on board for any length of time. Field guns should be ashore as soon as the infantry, but it is doubtful whether it will be wise to attempt to land the teams, for the same reason as given for cavalry. It might be better at first to have only gun's crews of Blue-jackets and Marine artillerymen, who are trained to drag their guns for considerable distances, and are accustomed to the work of getting them in and out of the boats. For this purpose the naval field guns would be utilised.[1]

Many details of landing are discussed under the head of Organisation. Much will depend on the possibility of a careful artillery preparation from the ships, but in the artillery duel also modern improvements have caused the balance of favour to pass from the ship to the shore. If, however, the defence is only armed with field artillery and movable armament, it should be possible for the fleet to fire effectively beyond the range of the shore guns, as happened at the bombardment of Arica (Chili, February, 1880). But now all land service guns can fire with excellent results from behind cover, so as to present a target almost unattainable, because invisible.

The Attack by a Fleet on Coast Defences.

The mention of bombardment leads to the discussion of the possibility of an attack from the sea on a port carefully prepared for defence, such an operation being an ordinary adjunct in the past to a landing expedition.

The question has very materially altered since the days of Copenhagen, 1801, and Algiers, 1816. At that time the vessels enormously outmatched the shore batteries in weight of metal. The line-of-battle-ships often had as many as sixty-six guns to the broadside, and a fleet was immensely superior to a fortress. A modern ship of a recent class has four barbette guns, a secondary battery of, perhaps, twelve 6-inch guns, and some thirty small Q.F. and machine-guns, which will enable her to throw a very much smaller weight of shot than the old ship, and places coast-defence armament in a vastly superior position. The exceptional rapidity and accuracy with which such armament as the protected 6-inch Q.F. guns of the "Royal Sovereign" class can be worked, may do a little to restore the balance, but not much. The great advantage possessed by the permanently-placed shore guns is, that they can fire

[1] "Combined Military and Naval War Operations," p. 28.

from pits, or *en barbette* with H.P. mountings, so as to present little or no target to the ships, and they can be dispersed without depriving their commanders of effective control of fire—thanks to the introduction of many electrical appliances. The position of a uniformly moving target can also be predicted, and its range be obtained at the gun, in time to allow of accurate laying—an advantage denied to the ship, for although she may possess intelligence determining the position of the batteries on her charts, she cannot fix her own position while under steam with sufficient correctness to permit of accurate high angle fire against an invisible target some 15 feet in diameter. Such observation of the effects of fire as would enable the laying to be corrected will not be obtainable on board, especially if the land service guns are placed in high batteries. The naval attack of Sevastopol which took place on the 17th of October, 1854, in conjunction with the opening of fire from the allied trenches, illustrates the disadvantages under which a fleet lay, even at that period, when fighting shore batteries some distance above the level of the decks.

"The fire was delivered from more than 1,100 pieces of heavy artillery; whilst to meet this great cannonade the Russians could only bring to bear on the fleets 152 guns; and of those there were as many as 105 that were in open-air batteries firing over the parapet, so that there were only forty-seven casemated guns to meet all the broadsides of the allied fleets."[1]

The result was disastrous to the allies. Only 138 Russians were killed or wounded. None of the forts were seriously damaged, while the allies lost 520 men. The ships were much injured, and the fleets greatly lost in *moral* from the feebleness of the results obtained after a tremendous expenditure of ammunition.

The bombardment of Alexandria, 11th July, 1882, may indeed be counted a success, but the results obtained there were hardly in proportion to the means employed. Eighty heavy guns were brought to bear on thirty-six ashore, and there can be no comparison between the nature of the armament, fittings, and the skill and training of the gunners, so vastly were we superior; yet comparatively few guns were dismounted, and shrapnel and machine-gun fire did not produce effects which could be called decisive against well-disciplined troops. Meks Fort, which only mounted five heavy rifled guns, nine smooth-bore and five mortars, was engaged for three-and-a-half hours by four English battle-ships, at medium ranges, yet no gun was dismounted or disabled, and two only were touched by heavy projectiles! Later than this affair—which is not a good example, as the odds were so unequal—there is no war experience on which to base an opinion. It is possible that with the ordinary class of artillerymen who would be available to man the guns of coast defences on mobilisation in Europe, that the working would not be so vastly superior to that of the Egyptian gunners. The gunner ashore has to fire at a moving target, and the elaborate arrangements involved in getting the prediction, etc., to the gun are likely to break down with indifferently trained men. In this latter respect the seaman gunner or marine is vastly ahead—he sleeps

[1] "Naval attack on Sevastopol," Kinglake, Vol. iii., pp. 423-4.

alongside his gun, cleans it and drills at it every day, and therefore knows it as the old cavalry soldier knows his horse, whilst on mobilisation it is possible that the coast-defence artilleryman will be new to the particular weapon he has to work.

In addition to its other difficulties, a fleet will have to contend with mobile torpedoes, coast-defence torpedo-boats and gun-boats, and with ground mines, if it ventures too close. Unless it has absolutely nothing to fear from the enemy's fleet, it will have to be very careful in its expenditure of ammunition, or it will lay itself open to a counter attack when its magazines are half empty. Precautions to this effect will be especially necessary if it is far from its base of supply.

The attack of a harbour fortress should then ordinarily require military co-operation from the land side, whilst the duty of the Navy should be mainly confined to blockading the port, preventing any interruptions from a hostile fleet, and of course rendering any minor aid, which can be given by its guns and crews; but no aid impairing the fighting efficiency of the fleet must be expected by the Army while there is a hostile fleet afloat in a position to in any way interrupt the siege. These relative functions of Army and Navy are not new, but were proved many times in the old wars. Charleston was twice successfully attacked by land and sea—in 1780 and in 1863—and each time after the failure of a purely naval attack. In spite of our successes at Copenhagen in 1801 with the fleet alone, we thought it wiser in 1807 to despatch an army corps as well, and with good results. The attack on the forts at Sevastopol would probably not have been tried if a Russian fleet had been extant in the Black Sea, and was possibly in part designed so that the sailors might share in the perils and glory of the capture of the place. It was found that their work in arming and manning siege batteries ashore, and in dragging up supplies from Balaklava was more valuable.

But it has been already seen that the ships' guns are invaluable in covering a resisted landing, and in this work the longer range of the modern weapons will enable the fleet to co-operate, even though the immediate approaches to the shore are shallow. The "*manned and armed*" boats of the fleet will be of the greatest assistance in forcing the landing, and naval co-operation will be of value in a general bombardment, or in the assault of works near the beach. A most serious danger to modern transports will also have to be guarded against whenever they are anywhere near a hostile coast—to wit, an attack by torpedo-boats. A flotilla of these approaching in the night may, in a short time, produce most ghastly results if adequate preparation is not made to receive them.

After Landing.

Of tactics after landing, little is to be said. The forces will be engaged in clinging on to the position ashore just attained, or in preparing to move (or moving), either flankwise on a port to serve as permanent base, etc., or to seize some strategical point inland. In each case something in the shape of outposts or advanced guard will be required. These may have been detailed before disembarking. The

Army must be fed, and in the past has found it frequently most convenient to draw its first supplies from the Navy. The circumstances which make a rapid advance of the whole force inadvisable in a sterile country have been already pointed out. In any case, after a sea voyage of any considerable duration, long marches will only be performed with a certainty of breaking down a large percentage of the horses, and many men. In old days a temporary disembarkation at a final port of rendezvous was sometimes resorted to, to get all into good condition; it might be useful now, but has obvious disadvantages. It is only in fiction that the cavalry rides 40 miles inland on the day of disembarkation; and sometimes a few hours at sea are a harder trial for horseflesh than a railway journey to Saarbrücken from the confines of East Prussia, followed by a short trot on to the battle-field of Spicheren. So, in spite of the value of the mounted services on the first days of work, it will generally be found advisable to spare them any great strain, though this must naturally depend on the object to be attained, and the condition in which they are found.

IV.—ORGANISATION.

The last, and most important, of the main divisions, sub-divides naturally into preparations in time of peace with no objective and enemy in view, and into the organisation required for a particular campaign; but history shows that there is no clearly marked dividing line between Peace and War, and therefore that the second kind of preparation may be carried out during a state of nominal peace.[1] Thus it is hard to draw a fixed line between the two sorts of preparation, and they will be discussed together.

The only peace test of organisation is by mobilising on a large scale—a great expense, but a very valuable exercise. It has been pointed out, too, that the custom of periodical mobilisation may be of value when a screen is required for concealed preparation for a fixed objective.[2] For the rest, all preparation during peace must have the defect that it cannot be tested under the extreme strain which is likely to search out its weak points in time of war.

The official books giving details on this particular subject are :—the "Instructions for Mobilisation," the "Queen's Regulations," Section XVII. (giving instructions for the routine movements of troops by sea), and the "Transport Regulations," which give every detail as to the method of obtaining efficient ships for transport work, a duty which falls to a special department at the Admiralty, known as the "Transport Department."

The "Lectures on Staff Duties" devote Chapter viii. to the question of "Transport of Troops by Sea," with a large portion of the chapter (pp. 177-189), to this very question of naval descents; and much information of the same value is to be obtained from Wolseley's Pocket Book; Furze on "Military Transports," and "The Army Book for the British Empire," as well as in the official and other histories of previous expeditions.

[1] "Hostilities without Declaration of War," by Colonel Maurice, R.A.

[2] "Egyptian Campaign, 1882," p. 6.

Many of the suggestions made here are to be found in these books, and others may seem obvious in the extreme; but as a rule they are given because in some expedition they have been neglected, or else to preserve the completeness of the detail.

If it shall appear in these pages as though the organisation of many of our expeditions was hopelessly bad, it is frequently because the errors are thrown out in strong relief (to the heroism, talent and hard work usually evinced in perhaps these very campaigns), in order to find the lesson—not to depreciate those pioneers, who are our only masters. And when we feel indignant, or melancholy, as we think of the Crimea, it is consoling to remember that it is not England alone who commits errors of maladministration. Of the many contemplated invasions of this country, scarcely one has been within a measurable distance of success, and at least one—that attempted by France and Spain in 1779 during the American War of Independence—failed entirely through want of organisation. The Channel was held by a fleet more than double our own, but the summer was wasted in the committal of errors, which careful arrangement would have avoided; and when eventually an easterly gale drove the allied fleet out of the Channel, the expedition was relinquished almost with a sigh of relief.

Of Naval Expeditions.

As regards the organisation of the first class of expedition, history provides little instruction which can be generalised for future use. The leading features of small British enterprises are the dash by which they have been generally carried out, and the success which has attended them even when fighting against tremendous odds. It may, however, be noticed that the failures have generally been due, either to an insufficient reconnaissance, or to the employment of an inadequate force; but it is scarcely right to insist too strongly on these matters—they are almost inseparable from the nature of the movements. Judging from the evidence available at present in the Fodi Sillah affair, untrustworthy guides were employed in the first case, and the difficult nature of bush-fighting against a savage foe possessed of fire-arms, had not been thoroughly taken into account; yet this is a kind of warfare in which we English ought to have vast experience, after our heavy losses from the same cause in North America from Red Indians, against various tribes in Africa, in Burmah, and in New Zealand. However, no general principles can be laid down on this head which shall be a sure guide to success. Each separate tribe of savage foes must be treated as a sportsman treats some strange game—information must be sought from those experienced in the habits of the animal, and if no such information is available, he must be approached with the exact proportion of caution and enterprise suitable to the individual case and the force employed; and who shall say what this exact proportion is?

Nelson's attack on Santa Cruz in the Canary Islands in July, 1797, is an instance where the force employed was wholly inadequate, considering the strength of the garrison and the fortifications; but many unforeseen

difficulties were encountered. On the other hand, the Island of Curaçoa was captured on the 1st January, 1807, by Captain Brisbane, R.N., with the small force carried in four British frigates, although this island was also strongly fortified and had a considerable garrison. This was of course owing in large measure to surprise, and an accurate knowledge of the habits of the enemy to be encountered, yet speaks of careful reconnaissance; and many similar feats in our naval history forbid the use of any language which might in any degree tend to discourage their accomplishment in the future.

In June, 1857, Keppel was beaten back in an attack on Chinese forts, with heavy loss, owing to the narrow channel through mud at low tide; and in 1859 Admiral Hope, after failing to force the passage of the Peiho, attempted to carry the forts by a *coup de main*. His landed force consisted of a detachment R.E., a brigade of marines, and a division of French and English seamen. The ground had not been carefully reconnoitred, probably a reconnaissance was scarcely possible,[1] but the attack had to advance over mud flats intercepted by three ditches, the men often knee-deep in mud. They were repulsed with a loss of sixty-four killed and 252 wounded.

Reconnaissance.

These few remarks dismiss finally operations purely naval, and the remaining pages will deal almost exclusively with the "Minor Expedition" and "Serious Invasion" classes. But careful reconnaissance is necessary to successful expeditions of all types, and as regards strategy, tactics, and organisation. It is, moreover, a subject to which great attention should be paid in peace, by the systematic compilation in intelligence departments of all information about countries which may include the theatres of future enterprises, and which in our case simply means details concerning the whole wave-swept frontiers of the world. Modern science is helping much in this, since explorers and geographers are constantly giving fuller information of distant countries, and it is yearly getting easier to obtain details as to climate and food supply, possible landing places, harbours, ports, straits, etc., and their defences. All valuable knowledge of this kind, being summarised and catalogued with reference to the country of which it treats, and being placed for easy reference, will be of immense assistance when the moment arrives for selecting an objective, or considering the best methods by which that objective may be reached. Ignorance on some of the above heads has been most marked in the past, notably in the Crimea, and even in the last Chinese War (1860). Ordinary peace preparation naturally includes the general study of geography by every officer, if for no higher reason than that he may at least prepare for the climatic conditions of the countries in which he may be called to serve.

[1] Illustrating, perhaps, the difficulties of reconnaissance in such cases is the intelligence that on the 25th August, 1894, on coercive measures being taken against Chief Nanna of Benin, a reconnaissance boat was fired on from the bush, killing one seaman and wounding two officers and four men. Captain Lalor, R.M.L.I., died of his wounds on 8th September.

In 1854 the Foreign Office had certainly collected some information as to the Crimea and its defences; but the soldiers and sailors engaged in the expedition were absolutely ignorant as to the state of Sevastopol and the number of its defenders, and when the armament arrived on the 9th September it was compelled to remain at anchor at its rendezvous, forty miles west of Cape Tarkand, on the 10th, while the principal naval and military officers, French and English, steamed rapidly along the coast to select a landing place. They were able to choose a piece of open beach singularly suited for the purpose in many respects, for there were two small lakes at the inner foot of the sea-banks, merely separated from the sea by strips of beach, while from this were roads going up the banks. Thus, troops landed on the beach were protected from attack in front by the lakes inland, while the roads gave fair access to the interior. (This sort of position, however, has the defect that it has few tactical outlets to the front.) But these advantages would be shown on a good map, and it should always in future be possible to determine the position or positions for landing so far beforehand as not to delay the enterprise, though it will, of course, always be satisfactory for the commander to verify his selection by personal inspection. It has already been noted that the landing, though unopposed, was delayed by the rising of the surf—a difficulty to be avoided by the selection of a sheltered spot.

But what was of greater moment in the Crimea than this strategical and tactical ignorance, was ignorance of climate, or at any rate absence of preparation to meet climatic conditions so as to preserve the health of the troops. When it is remembered that in every war the proportion of men felled by the sword, shell, and bullet is small compared with those who are rendered *hors de combat* by sickness and disease—and these caused to a considerable extent by strange climatic conditions—then this campaign, as a whole, stands out pre-eminent as an example of ignorance and neglect. From the outset it was pursued by the terrible ravages of cholera, the seeds of which were sown at Varna, whither the allies were at first aimlessly despatched. With the arrival of the cold weather, however, the importance of this died away, and it first dawned on the authorities that the contemplated raid on Sevastopol was lengthening into siege operations which would last over the cold season. They then thought it advisable to call for a report on the Crimean winter, and they received in answer information which showed the extreme difficulties which the Army might have to encounter. It came too late; no efficient steps had been taken to provide the Army with necessaries, much less comforts. A complete disorganisation followed the lack of preparation, and truly awful were the scenes witnessed in the allied camp in the exceptionally severe winter of 1854-5. There were good supplies of many kinds in the harbour of Balaklava, and this was separated from the Upland on which lay the English Army only by a few miles; yet this distance was traversed by a road so inferior, and the general organisation, added to the lack of transport, was so bad that the stores could not be brought to an Army which was dying for the lack of them. The absence of forage was most remarkable, and accounted in part for the deficiency of transport.

The violent storms of that piercing winter had disastrous effects on both sea and land, for ships bringing supplies were wrecked in considerable numbers in the Black Sea; and the blowing down of tents, whose fittings were so worn as to be incapable of standing the slightest trial, left the shivering forces on the Upland exposed to the rigours of an almost Arctic winter. Careful organisation in peace, and preparation after the outbreak of war, would have lessened to a most considerable degree all these disastrous effects.

The Crimea was a far-distant peninsula, which may give some excuse for ignorance as regards climate; but this could not be claimed for a country so near us as Holland, and yet the Walcheren Expedition in the autumn of 1809 ended in a dismal failure from the horrible ravages of low fever, which is a regular visitor of the low-lying swamps at the mouth of the Scheldt. More than one-third of the whole force suffered from the disease, and the troops had to be withdrawn. The expedition was sent out at a period when the sickly season generally begins, and was kept in Walcheren till the time at which the inhabitants (of whom nearly a third were attacked every season) begin to recover, *i.e.*, from the middle of August to the arrival of the first frosts. Truly an admirable example of military forethought—a wise expedition using up some 37,000 men at a time when the Peninsula Army was fading from lack of reinforcements!

The war in 1863 against the King of Ashantee is another case. It was commenced in the spring, which is the sickly season in that part of Africa, and even the West Indian troops were unable to endure the climate, so the undertaking had to be given up. Profiting probably from this experience, in the third Ashantee War, Sir Garnet Wolseley sailed from England on the 12th September, 1873, and returned to Portsmouth, having accomplished all his objects on March 21st, 1874. After the previous examples, it is a relief to recount an expedition so admirably adapted to the season.

Yellow fever defeated many of the English and French operations in the West Indies during the long wars. Altogether, it is evident that *climate* requires attention as a study during peace, but further inquiry still would have to be made after an objective had been selected in any country at all remote, in order that modern science might endeavour to guard against such disasters as have been recorded. Medicines and medical comforts will require an important place in the loading of transports; hospital ships will be wanted at ports serving as bases, as well as the ordinary military hospitals ashore, and also ships properly fitted for bringing home such invalids as can be moved.

Similarly to climate, all the other matters of peace reconnaissance, after aiding in the choice of an objective, will require amplification when this has been selected. A report on the suitability and capacity of a harbour of rendezvous may be required. Reports may be needed on suitable landing places, for the information given in maps and charts is often limited, and on many shores suitable places are not easily found. Napier describes this difficulty as regards the coast of Portugal, when Sir A. Wellesley wished to land the expedition of 1808. This coast from the

Minho to the Tagus presented a rugged and difficult front, the river-harbours were rendered difficult of access on account of the bars, and with a South-West wind it would be hard to imagine a more dangerous shore. At that time Lisbon was not in our hands to form for us a base of supply, as it did in after years; and many other points were fortified against us.

A sheltered bay is always preferable to an open beach, and a regular harbour to either, but such suitable spots are generally defended. A landing on a stretch of beach has the signal advantage that infantry can be put ashore in such a manner as will permit of their most rapidly taking up a fighting formation; but many risks must be run. On most coasts a wind on shore, or anything approaching a gale, will prevent the landing being carried out, and the dangers of a surf-beaten shore are not always apparent till the boats are actually in the broken water, when it is perhaps impossible to draw back. The landing on the Island of Belleisle in 1761 was delayed by weather for fourteen days, and that a similar fate befell the expeditions to Egypt in 1801, to Algiers, 1830, and with greater inconvenience still to the expedition to Ostend, 1798, and to the Crimea, has been already related. It may, in fact, be stated, that delay due to weather is the ordinary fate of expeditions requiring to land on an open coast.

In the reconnaissance of a landing place, the beach will have to be reported on as regards its extent, so that the number of troops which can be landed at one time can be calculated; as regards the shallowness or otherwise of its approach; the difficulties of landing with respect to rocks, etc.; the normal rise and fall of tide; the possibility of the close approach of, and the quality of the anchorage for, large ships, both of transports to simplify the disembarkation, and of men-of-war to serve as covering force; and the shelter to be obtained in case of heavy winds. The Admiralty charts, however, will generally supply most of the information.[1]

On shore must be noted defensive positions for the first landed troops to act as covering force, and from the other point of view what sort of positions could be taken up by the defenders in a resisted landing (there should be no shelter from the fire of the ships' artillery), and the possibilities of hasty fortifications by both sides. Of course, a full report on any existing fortifications; these if efficient will almost condemn the place at once, unless the invasion is to be either a surprise, night attack, or made in great force.

The nature of the roads going inland, and the possibility of an advance in direction of objective must be considered, and a report will be required on the question of supplies, camping-ground, out-posts, and water. It is important to note whether any transport is obtainable, and if the inhabitants are likely to bring provisions for sale.

There remains the strategical point of view, which requires to know if the landing place is suitable as regards the objective and base of

[1] The distance occupied by large transports moored has been already noted. The landing beach in Aboukir Bay, 1801, was three miles long, and 5,500 men were started in the first line on a front of about a mile.

supply, and whether there is a secure port close at hand to serve as permanent base. As many alternative landing places as possible should be selected, and each should fulfil the above conditions as far as possible, remembering that a harbour, if undefended, is always preferable to an open beach; but torpedoes make an effective bar so easy that such good fortune is scarcely to be looked for.

The more general question of strategical reconnaissance after landing comes under the heading of ordinary military tactics.

Commander-in-Chief.

The next important question of organisation concerns the chief command of the forces and the selection of the staff. It has ordinarily been our custom in such expeditions to place Army and Navy under separate Commanders-in-Chief, and as a rule the system has worked well, though at times there have been serious misunderstandings. Yet it is most distinctly a case where two heads are better than one, and where the line of demarcation between the spheres of authority is very clear. The Admiral must be supreme while the flotilla is on its way, and until the troops are put ashore, when the General's will must be of the first importance. In the selection of the place of landing and the base of supply, their opinions should carry equal weight, and agreement should rest on the approved good feeling and common sense of selected leaders. The French generally meet the difficulty by making the General supreme, but this has many disadvantages. In China, in 1860, in discussing the place of landing, instructions from England decided that if a difference of opinion arose between our General and our Admiral, that the Admiral's opinion was to prevail, but they both agreed to attack the northern forts. The French General, however, disagreed; but, possibly because the French Admiral had no vote, the General ultimately found that he was wrong, and the French had to come over to our side. It is probably right to leave the casting vote in choice of landing to the Admiral, on account of his greater technical knowledge of the difficulties, and he is not likely to wish to land the Army in a position strategically unsound.

It was suggested in the commencement of this year by some of our deepest thinkers in Service matters that the whole control of Army and Navy should pass to a Board of War, with a responsible Secretary of State, and composed of the greatest leaders in Navy and Army, who should decide on all questions concerning war, whether defensive or offensive. Now it might be possible that a Commander-in-Chief selected by such a Board, being in part chosen by both Services, could be given the chief command in a critical enterprise without giving ground for jealousy, were he soldier, sailor, or marine. An exceptional man in such a position would be able to go straight for his object entirely unhampered, which might, under certain circumstances, be an advantage; but the other method will work best as a rule.

In selecting a commander for the Army in British expeditions, the Government has acted from various motives, but it has ordinarily happened that one man stands out from the rest as pre-eminently fitted for the work.

The most marked instance of irresolution in this respect occurred in the Peninsula. In 1808, the Government, utterly deceived by Spanish and Portuguese enthusiasm, were doubtful whether to send an expedition to Cadiz or to Lisbon, and had scattered British troops in all directions. Sir J. Moore had gone towards Sweden with 10,000 men. Another 10,000 were in Sicily. Gibraltar was over-garrisoned, and General Spencer had 5,000 men wandering between Ceuta, Lisbon, and Cadiz; while 9,000 were collected at Cork, destined for South America. Eventually these latter were placed under the command of Sir A. Wellesley, who sailed on the 12th July, 1808, to invade the Peninsula, and two small divisions were sent to join him from Ramsgate and Harwich. Admiral Purvis had vague orders to direct operations, and Sir Arthur's instructions only contained one thing of certainty, and that was, that he must enable Portugal and Spain to throw off the French yoke! Sir H. Dalrymple was now appointed to the chief command, and Sir J. Moore was ordered to place himself under another General, Sir H. Burrard.

Sir Arthur commenced to land his troops on the 1st August in the Mondego River, and by the 20th had so placed all the British forces available that the single victory at Vimiera, on the 21st August, led to the French evacuation of Portugal. But on the 20th his senior officer, Sir H. Burrard, had arrived, who, in his turn, was superseded by Dalrymple on the 22nd. Thus in twenty-four hours, while a decisive battle was fought, the command changed hands three times; not, as has often happened, owing to the casualties of war, or, as at Woerth and Spicheren, by the successive arrival of leaders of superior units marching to the sound of the cannon, but to the folly of a Government who, having selected a good man for the work, could not leave him to complete it. Napier, speaking of a similar error of this Government in the same year, during Sir J. Moore's invasion of Spain, says: "The Generals were the only persons not empowered to arrange military operations," and Sir A. Wellesley, in the later campaigns, was only able to continue the war because he had a brother who was listened to by the Cabinet. On this question of leaving a free hand to the commander, the wealth of past experience is almost embarrassing, and it would be hard to grasp the extent of the folly of any Government which could repeat the fault of trying to control from home the action of one whom they themselves have selected, among the many others obtainable, as the best fitted to carry out their object. Napoleon in 1800, not being yet Emperor, left Moreau free to carry out a plan inferior to the one he had designed, and this forbearance brought success; but in later years, drunk with military glory, he frequently committed this error—endeavoured to control the war in Spain from various parts of Europe, and with bad results to the French arms. The surveillance of Lincoln, and the directions from the Federal Government at Washington, were fatal to McClellan's success in the York Town Peninsula. Lord Raglan was practically compelled to invade the Crimea by the Duke of Newcastle's despatch, and though none of the after disasters can be traced to this, it was certainly not the most correct method of procedure. In 1860 the blockade of all the ports north of the

Yang-tse-kiang had been ordered by the Home Government, but the objects to be gained from it were illusory, and the order was neglected.

The advantage of leaving a free hand to the General was well shown in the expedition to Abyssinia, where Sir R. Napier appears to have been only thwarted in some commissariat details (and after-events showed how much better it would have been to have followed his advice even in these particulars). The result was a great success, despite tremendous difficulties.

The most sensible system of commencing an enterprise, and apparently the one adhered to latterly, is for the Government to communicate with the most likely commander, and ask him to draw up a plan for attaining their object. If it meets with their approval, the designer is allowed a free hand to carry it out. Then all should go well with him if he is serving a strong Government, but in a country governed by party the General's greatest stumbling block is public opinion, which, headed by the press, begins to howl at the slightest apparent delay, and all the historians of all our wars point out how, at some period or other of the campaign, such a clamour has been raised. It is generally due to the non-appreciation of the "A, B, C, D" principle, and *à propos* of this, Colonel Maurice quotes Sir A. Wellesley, who, writing of one of the most successful of our enterprises, the Copenhagen Expedition of 1807, says: "I don't doubt their impatience in England, but I don't think they ever form in England an accurate estimate of the difficulties attending any military enterprise which they undertake." With a weak Government this sort of outcry often leads to telegrams and despatches to the General, urging this and that measure, tending to check clear decisions at the seat of war, and, perhaps, eventually to the sacrifice of hardly-made reputations.

The following *précis* from the official history will give some idea of the questions that had to be settled at the beginning of July, 1882. Arrangements were made to provide tents; wood as fuel for 20,000 men, for sixty days, from Cyprus, was demanded; and preparations had to be made to purchase mules. The formation of a railway-construction company of engineers, the organisation of a corps of military police, and regulations as to newspaper correspondents were determined on. The establishment of hospitals at Gozo (Malta) and Cyprus; water-supply, revolvers, carts, the extension of service of men then serving with the regiments, from six years to seven years, had to be considered. Every measure which would reduce the number of horses to be taken with the force had to be resolutely enforced. The formation of a postal corps was determined on, and a scheme for it devised. It was decided to arrange with the Indian Government as to the despatch of troops from thence. All these points had been settled, and the details departmentally worked out by the 10th July. Such are the kind of details which caused delay at the outset, and the difficulties to be overcome will be greater as the campaign advances. Impatience can be forgiven to the ignorant; it only is a real hardship for the Commander-in-Chief to struggle against, when

the cry of "Why this delay?" comes from the officer and the educated classes; and when the Government, in its turn, begins to apply pressure, it requires, indeed, a strong man at the head of affairs to press steadily and surely on to the objective of the campaign. Yet no less a one is fitted for the leadership of the British Expedition. As for the staff, they cannot well be chosen in peace, as the men best fitted for the work will be such as are well acquainted, not only with staff work in the field, but also with the particular country in which they are about to serve, with a knowledge of the language and customs of the inhabitants.[1]

Mobilisation and Personnel.

Judging from the extract just given of the matters which had to be considered at the commencement of the 1882 campaign, it would seem that hitherto all details of preparation and mobilisation have been thought out from the beginning for each individual enterprise. This laborious and haphazard system was entirely unfitted to the war preparations of a powerful nation, and latterly we have made great strides towards an efficient system of mobilisation. The highest elaboration is rightly directed towards a speedy preparation for home defence, and its only apparent defect is, that it has never yet been placed to any severe test. For foreign service, less can be done, in spite of its relative advantage of being founded on past experience, on account of the widely-differing circumstances for which it has to provide. Frequently, the initiative would rest with us, and therefore, time could be gained to organise speeially to suit the exact situation; but such breathing space cannot be depended on, and all possible steps should be taken to help the despatch of the force at the shortest notice.

In the "Minor Expedition" the transport suitable, the method of obtaining supplies, and the proportion, etc., of the different arms best fitted to cope with the enemy's system of tactics, have ordinarily differed, but a force is told off from the home garrisons which should be sufficient to meet ordinary contingencies, the majority of the *cadres* being at Aldershot, and the equipment which is selected as being suited for the climates in which the troops are most likely to serve is divided between Aldershot and Southampton. The total number of this force may be made to vary from 20,000 downwards, according to the requirements of the case, and to whether the ranks are filled by Reservists or otherwise.[2] If the reserves are called out, whilst they are joining their battalions, the embarkation of the heavy stores will be proceeded with, but the extra amount of work involved must cause a slight delay. Therefore, in the absence of any special emergency, it will be preferable to send the units as they stand. The battalions at home have generally at least 450 rank and file, after the young soldiers under one year's service have been sent to the depôt; and small battalions, if there are enough of them, are not altogether unsuited to

[1] "Egyptian Campaign, 1882," p. 5.

[2] For details see p. 1113 JOURNAL R.U.S.I., October, 1894. Von Löbell's Annual Reports.

uncivilised warfare. The reserves will still be available as reinforcements if the operations are protracted, or in case of European complications, and very weak units may be strengthened by reservist volunteers. The objection to calling out the reserves is that of rendering the Army unpopular, by upsetting their employment chances in an already over-supplied labour market. It seems even to be a more popular step to embody militia regiments to replace those sent abroad.

A brigade of Guards may accompany the expedition, and a brigade of Marines will be an excellent complement to a force otherwise composed of young soldiers. In 1882, one-third of the reserves were called in, and Guards and Marines were both employed; while the embarkation was carried on from many ports, and on no settled plan. No regimental transport was in existence, a serious matter, which caused considerable hardships to the troops first pushed to the front.

In the "Minor Expeditions" to China, Magdala, and Egypt, and in all expeditions despatched from India, contingents of Indian troops have been employed; and in 1878, when there was a chance of war with Russia, 6,122 fighting men and 2,500 followers were brought to Malta from Bombay and Beypore. Thus these native troops may be counted among the possible *personnel* of a force, but they add great difficulties to the supply and transport departments, both on account of the large number of camp followers necessary and the different kinds of food required by various castes and races.[1] For these reasons Lord Wolseley recommended that they should not be employed in the Nile Expedition, where supply was one of the greatest difficulties.[2]

Experience in savage campaigns has shown that the lance is the most serviceable weapon for cavalry; whilst artillery are of little service, when the suddenness of a savage rush and the difficulties of transport are considered.

Mounted infantry, on the other hand, have been found of great value, and have been employed in each small war since Zulu and Boer experience proved their worth; thus in some shape or form they will surely be among the first despatched to the seat of war. In the Nile Expedition a camel corps of some 1,200 men was formed to meet the necessity of quitting the river and taking a short cut across the desert. It was composed of volunteers from the cavalry regiments at home, the Guards, the two battalions of the Rifle Brigade at home, and the Royal Marines. It did excellent work.

The constant mention of the Marines recalls the fact that almost every expeditionary force has contained some of these troops, who are not of course included in the War Office scheme of mobilisation. Yet, if the principle of getting the right men in the right place is followed, the history of the past is conclusive in making them a necessary and valuable ingredient of a landing force. In the actual disembarkation, there will always be a vast difference in the "handiness" of the mere soldier and of those who are trained to the sea, which is fairly represented

[1] "The Chinese War, 1860," p. 5.

[2] "Soudan Campaign," Vol. I., p. 27.

by the naval saying, "that into a boat which would hold with ease 100 blue-jackets they can get eighty marines andonly sixty soldiers." In 1882 the Marines were pushed forward ahead of the rest of the force in torpedo-boats to seize Ismailia, and from that time forward were included in the advance guard.

The marine has the advantage over the blue-jacket in that he can be better spared from the actual work of the ship, and that he has such a confirmed military training as will make it more natural for him immediately on landing to take up a fighting formation, form an advance guard, or throw out out-posts; and these on the most modern Aldershot method. He has the advantage over the soldier in that he is used to landing from boats, and can help in their actual working; is older and tougher; and, while being equally well drilled and trained, will settle down better in strange circumstances, owing to his rough-and-tumble life afloat.

For these reasons the Marines should be in the first line in all landing operations, and now that we have some 15,000 of them, a brigade should be included in every important expeditionary force, if the enemy's fleet is such a negligeable quantity that they can be spared by the Navy. They require no distinct place in the mobilisation scheme, for it will always be possible to get them away with the first troops, as their peculiar organisation in their headquarters at our dockyard ports permits of a small battalion being sent away from each division at a few hours' notice; and a battalion may be formed abroad by landing the men of the detachments serving in the convoying fleet itself. It must be remembered that they will not have any regimental transport, and this defect might be supplied by arrangement with the Admiralty for the detailing of full equipment for a marine brigade, and placing it ready for mobilisation at Portsmouth or Southampton.

There is one thing more to be said about the Marines—their past history is so full of this sort of work that their prestige and *esprit de corps* will ensure it being done successfully if possible. No examples are taken in corroboration of this statement, because to do so thoroughly would be to recapitulate nearly every British expedition in any way alluded to.

As to the employment of Naval Brigades, it would appear that sailors are more useful to the general cause in their ships, or at the base, than in following the advance inland; for although they are highly valuable as infantry or gunners, owing to their excellent physique, trained intelligence, and readiness of resource, they cannot but be deficient in many details of land warfare, and their work ashore can be done at least as well by soldiers, whereas afloat they cannot be replaced. An infantry soldier can be trained if necessary in three months, while a blue-jacket takes at least as many years to make him fit for his multifarious duties. The Nile Expedition and similar enterprises, where there is much water communication, must be considered exceptions. Moreover, the work done by Peel and his men in 1854, and in the Mutiny, will live in history as belonging to the greatest exploits of our century. The naval work in manning siege batteries in the past, and of the Brigades in more recent years in Abyssinia, South

Africa, Egypt, and Burmah, will not readily be forgotten; nor will the hardship of denying to a service which has had the severest and least interesting work at the base, a share in the more noted actions of a successful campaign. These remarks, in fact, merely point out that the employment of naval brigades ashore is a theoretical mistake, whilst in practice, in all our wars, we have been only too ready to avail ourselves of their valuable and willing aid, more especially as insufficiency of numbers is an error common to most of our expeditions.

To dismiss finally the subject of seamen and other matters before going on to mobilisation for the "Serious Invasion" class, a slight divergence is necessary.

In the actual operation of landing, the blue-jacket's highest usefulness is found in his natural sphere, that is, in the working of boats and ships' guns where resistance is felt, and in the actual pulling and hauling which is necessary to get men and horses from the ships to the boats, and from the boats to the shore. Of the enormous value of the blue-jacket in this work, of the heartiness which he throws into it, and the sort of "motherly" way in which he protects the more helpless soldier—history abounds in examples—as in Sir R. Abercrombie's landings, in the Crimea, in the Abyssinian Campaign, in the landing at Cyprus in 1878, and, indeed, everywhere.

It would appear that the seamen of the transports should do the mere manual labour part of the disembarkation, but under fire, or at great crises, they have too little discipline (or perhaps "military training" would be a fairer expression) to be altogether trusted. As a rule they will be found brave enough, this quality being rarely lacking in the British seaman; but there are undecided questions as to pensions, decorations, etc., which should prevent their being exposed to any danger not absolutely necessary. Before the landing in the Crimea, the captains of the transports (not being naval officers), while expressing their willingness to do all that was required of them, yet came to ask Lord Raglan to promise, in the name of the country, that provision should be made for their wives, children, and others dependent on them, in case of their death or disablement. The promise was, of course, given, but it illustrates this weak point in organisation, which may possibly be remedied by the employment of the Naval Reserve for this kind of work. At present, there are not enough of these, particularly if a naval war is being carried on at the same time as the expedition. As a rule, then, the blue-jackets are the best and most fitting men for all nautical work under fire, *if they can be spared from the fleet*—a question entirely depending on the tactical situation. In a resisted landing a large proportion of the Blue-jackets, the Marine Artillery, and many of the Marines will be required to man such naval guns as can be used to cover the movement, and, of course, if the operations are in any way threatened by a hostile fleet, it will be impossible to in any way weaken the fighting capacity of the ships.

As a rule, between Army and Navy, there has been the most cordial

feelings and the heartiest co-operation, though there have been times when, as Marryat says, "The Army thought that the Navy might have beaten down stone ramparts 10 feet thick, and the Navy wondered why the Army had not walked up the same ramparts, which were 30 feet perpendicular." The root of these misunderstandings lies in the narrow-mindedness, which cannot grasp the divergent points of view from which many things are regarded in the two Services, and the different methods employed to get work done under varying states of discipline. The error is being dispelled by education, but would leave us more rapidly if there could be more peace-work in common.

If, now, such differences have been known to arise between the sister Services, whose common aim is how best to serve their country, it is not surprising to find that there have been great difficulties in working smoothly with allies in our expeditions, and, as a rule, difficulties of which we only know one side. The perusal of Spanish and Portuguese accounts of the Peninsular War, of Prussian memoirs of 1815, and of French histories of the Crimea and of the Chinese Expeditions, alter materially the impressions left by Napier, Kinglake, and other English writers. There is no method of preventing these disagreements in the future; but the use of the greatest courtesy, with the strictest punctilio, melted wherever possible by *bonhomie*, will tend to ward off avoidable misunderstandings.

Yet it must, as far as the past is concerned, be accepted as a fact, that a reinforcement is of more value to any force than a junction with double the number of allies, for there will generally be divergent bases, and entire amalgamation of aims and ideas will be always impossible. In spite of this, we should study to avoid the differences that break up coalitions which will assuredly be necessary to us in the future.

If England is to retain her place among the Powers, and is to properly defend her foreign possessions, she must prepare for the landing of an offensive force on the coasts of a European enemy. Napoleon boasted that he would "re-conquer Pondicherry, on the banks of the Vistula." In like manner it is probable that we can best secure "Greater Britain" by being prepared to effectually turn the balance in a continental war between two evenly-matched Powers. Our great place in the world's history will not suffer that the deeds of the Peninsular War, of Waterloo, and of the Crimea should be entirely a dream of the past, with no hope of their repetition in the future. How greatly the current of the great struggle against Napoleon was influenced by our being able, in 1807, to blockade Copenhagen and capture the Danish Fleet. At that time, the sixty-five vessels of war were accompanied by 377 transports, carrying some 37,000 troops, to whose aid the easy success was greatly due. Then, at any rate, the Army was a powerful adjunct to our Sea Power. Abroad, we are still supposed to be able to expedite a force worthy of our neighbours' serious attention (see "The Invasion of France," p. 449, Vol. xxxviii., JOURNAL OF THE R.U.S.I.). Let us see that the credit of this potentiality is not misplaced. It is of course impossible that we can unaided contend with the army of a great European Power, but we

generally acted in concert with allies in the past and should hope to have at least one in the future. We may then land a force so as to threaten the line of communications of an army, whose attention is already engaged in front, as Sir J. Moore did in his campaign in Spain; or we may attack a portion of a force which has got so far from support that we can land and crush it before aid can arrive, as in the campaign of 1808 in Portugal; or our men may simply form a part of an army, as at Waterloo.

To-day many of our greatest military thinkers are of opinion that the best and cheapest way to stop the gradual approaches of Russia towards India is in Europe.

We do not require such strength as would be a standing menace to the peace of Europe, or an undue strain on the resources of the country; but we should be prepared to mobilise an invading force so large, that, in conjunction with our Sea Power, it will make England universally respected, and thus form the greatest guarantee of national security. A hundred thousand men should do this effectually.

Our preparations at present stand somewhat as follows:—If we call up the Reserves, one army corps, a cavalry division, and troops for the line of communications can be at once mobilised and embarked. These can be supplemented later by a second army corps and by an increase to the cavalry division. The troops at first despatched will include twenty-nine infantry battalions (and one mounted infantry ditto), eight cavalry regiments, five batteries R.H.A., thirteen field artillery, and eight companies R.E., with also pontoon troop, telegraph battalion, hospitals, A.S. corps, bearer companies, etc., involving the sea transport of 52,000 men, 19,200 horses, and 2,600 vehicles. Taking the ships which happened to be available at a given date, the transport authorities at the Admiralty obtained the following results:—

	Ships.	Tons.
1st division	19 ..	65,455
2nd ,, ...	19 ..	61,828
3rd ,, ...	18 ..	63,451
Corps troops	21 ..	69,313
Cavalry division	30 ..	121,575
Line of communication troops ..	27 ..	75,490
	134	457,112

This would be a heavy tax on our Mercantile Marine, and, according to present arrangements, we should not be able to transport a second corps at once, so that it would only be mobilised after the first had started, and would be conveyed in the same ships in a second trip. According to our present organisation the despatch of this 90,000 men is the limit we can obtain.[1] Certainly, we have never sent more than 50,000 men in the past, and this is a great advance, but there should be no real bar to our ultimately despatching a third army corps in case of national necessity. To

[1] For late information see JOURNAL R.U.S.I., Oct., 1894, Vol. xxxviii. p. 1111, Von Löbell's Annual Reports.

mobilise the third corps for home defence, militia battalions have to be used, and although to employ these for active foreign service is not at present lawful, yet this is not without precedent, or an insurmountable difficulty. Moreover, if we were ourselves safe from attack, regular battalions could be withdrawn from garrison duty, or an Indian or Colonial contingent employed. It is, however, only in infantry that we could go beyond our present limit (as there are no cavalry or field artillery militia to supply the place in garrison of the regular troops taken from home), unless new *cadres* are formed, or troops from India are employed. As for extra sea-transport, the number of vessels available is constantly on the increase, and the ships are daily becoming more commodious, and therefore able to hold bigger units.

To replace the regular troops proceeding abroad on mobilisation the corresponding militia battalions will be at once embodied, and depôt battalions, squadrons, etc., will be formed to provide for the ordinary wastage of war. The amount of infantry and cavalry embarked at first in 1854 was 40,000, and reinforcements of 30,000 men to the Crimea failed to keep the force up to strength. In 1882, 234 died, and 2,321 were invalided in twelve weeks, so it is evident that large drafts will be required, but judging from past experience it is probable that recruiting will be particularly brisk.

Arrangements are now being made for units to draw their equipment at centres of mobilisation, and from thence to be entrained complete to the nearest port, thus providing for both rapidity and concealment by making use of many railways and all available ports. Our ordinary commercial arrangements of docks, wharfs, jetties, and sidings are so complete at the great shipping centres, and we have so much past experience in embarking expeditions at all the Government dockyards, that little special preparation is required. It is, however, a useful and essential staff-training to draw up plans and time-tables which shall prevent any clash or confusion.

Transport.

Experience has condemned the principle on which foreign reliefs are effected in troopships manned by the Navy, for in time of war the crews would be required for the fleet, and in peace the system is costly. Thus, in the future, probably most of our peace transport service will be carried on in hired ships, to which we have always had resort in war, the troopers never having been numerically equal to the work. Sufficient vessels should always be available, for the more serious the war the greater the stagnation of trade. Indeed, it should never be difficult to satisfy our requirements, considering that more than half the merchant shipping of the world (reckoned by tonnage) sails under our flag, and our 250,000 tons of shipping in 1750 increased in a hundred years to 3,000,000, and is now some twelve millions of tons, and that we have now over 7,000 steam vessels afloat. In spite of this affluence, it is an obvious and necessary preparation to watch carefully the growth of the Mercantile Marine, and register such vessels as seem specially fitted for transports,

and during peace to arrange terms with the owners for their use in war. This is the work of the Transport Department of the Admiralty, which is a growth of our vast experience on this head, and concerns itself with all arrangements of this nature.

The advantages of large and fast vessels have been already pointed out, and also the number and tonnage required for the army corps, cavalry division, and line of communication troops. To these facts it may be added that a battalion or battery will require a vessel of 4,000 tons gross, and that for a cavalry regiment three such vessels may be necessary. Therefore, "including provisions for a voyage of fourteen days, and for fourteen days after disembarkation, each infantry soldier (with his proportion of the regimental transport) would require 4½ tons gross, and that each cavalry or artillery horse (with the men and carriages of the regiment or battery) would require 17½ tons gross."[1] These calculations are for long voyages, and, on an emergency, "1½ tons gross per man and 5 tons gross per horse will certainly be found sufficient for a voyage of a few hours."[2] Enough data is, therefore, obtainable to calculate what amount of shipping will be required, and with ordinary care we should never be unable to obtain it when wanted, and at a very moderate cost. It is a matter of organisation in which we have scarcely ever failed, possibly owing to our peculiar aptitude as a nation for anything concerning shipping.

After ships have been taken over as transports, it is usual to fit them up by contract for the use of troops—a system which has worked well at home, but which has been found unsuitable in India, owing to the untrustworthy manner in which the work has been performed; and on the recommendation of Sir F. Roberts, after the Abyssinian Expedition, the system was apparently abandoned, as in 1878 the preparation of the transports for the expedition to Malta was carried out by the principal departments in Bombay. This advice indeed seems to apply to all contracts which have to be fulfilled out of Great Britain. It is not only in the old wars that scandals have occurred, but even in our latest expeditions, if rumour speaks correctly, all has not been as it should be. But, apart from dishonesty, contracting companies must look first to the interests of their shareholders, and the consequence is that the State, in any unforeseen difficulty, goes to the wall, and the Army suffers. An example of the sort of misapprehension which may arise, when all are doing their best, occurred in the Nile Expedition. The walers employed were built by different makers, and consequently the gear was not interchangeable, therefore it was important that boats and gear should not be separated. The boats, however, arrived in Egypt before the contractor who had engaged to deliver them at Wady Halfa, and as no mention had been made of the gear in the contract, it was delayed, separated from the boats, and part of it was lost, while the remainder only reached its destination after a great expenditure of time and labour.[3]

[1] "Staff Duties," p. 169.
[2] "The Army Book for the British Empire," p. 541.
[3] "History of the Soudan Campaign," pp. 63-4.

It is impossible to say that similar difficulties would not occur, if the Service did the work directly, but greater pressure can be applied and the matter pushed on at all costs. All employed, too, in the work, are most nearly concerned in the success of the enterprise, and will *see it through*, at whatever hazard. In preparing for the Magdala Expedition, Sir R. Napier urged that no expense should be spared, as being the most economical plan in the long run, and this is always true in the last war preparations. Real economy is only to be sought by careful preparation during peace.

Thus contracts are excellent to save expense, at home or in time of peace, when careful examination of the result can be applied, but during the stress of war, it seems better that all work (at any rate out of England), should be done under the direct responsibility of the Commanding General through his staff, and at whatever cost.

The transports are loaded under the superintendence of an embarking staff officer, who will usually have had peace experience of the work. His chief cares will be: to ship the heavy baggage before the troops arrive so that they can go straight on board; to place those things into the hold *last* which should come out first, to see that packages of stores are carefully marked on the outside with description of their contents, and that those first required are first sent away. Where different fittings are complements of one another, it is advisable that arrangements should be made for their simultaneous arrival, for left boots without right ones are not the most useful load a ship can carry, and when mules are purchased to carry blankets to the Army, it is not wise to send the mules to the front before the blankets arrive! As regards priority of embarkation, infantry should be sent away first, as a slight delay at the place of rendezvous will be of less detriment to them than to a mounted corps, and they only require ammunition, food, and medicine to force a landing and commence operations independently.

A detail which has been neglected in the past is the provision of a supply of money for obtaining food and transport from the inhabitants of the invaded country; for instance, when Sir D. Baird disembarked at Corunna in October, 1808, he had no money, and his troops were dependent for provisions and transport on the Spaniards, who had to be paid. He was able to borrow enough to allow of his advance by half-battalions at a time, conveying their scanty stores on country cars hired from day to day; and this was at a time when we were pouring millions of dollars into the country for the use of the Spaniards. Similarly it was found, on first landing in the Crimea at Eupatoria, that no money of the country had been brought, and it was only by drawing on private resources that a few Russian gold coins could be found wherewith to take the first steps towards encouraging the inhabitants to bring supplies. The Magdala Expedition, Abyssinia, in this respect, as in many others, had profited by Crimean experience, for the only coinage current in Abyssinia being the Maria Theresa dollar of Austria, British agents had been employed to buy all they could in Southern Germany, and British influence managed to set the machinery of the mint at Vienna in motion so that the Army might be supplied.

Whenever a siege, or attack of permanent lines, may be expected, it must not be forgotten that a siege train will require mobilisation. For this arrangements are made, but extra transports and repository gear will be required. The urgency of the case will determine whether the guns will be embarked in the first batch of transports or kept back till later, when the first preparations have been concluded. Many complaints as to the absence, or tardy arrival, of siege guns have been made in our past expeditions. As we have seen at Lorient, they were conspicuous by their absence. Alison, writing of the siege of Dunkirk, states that the defences were in such a deplorable condition that the place must have fallen if the bombarding equipment had arrived at the same time as the besieging army. Immense preparations were being made at Woolwich, but so slowly that the French were enabled to bring up relieving forces from the distant frontier of the Moselle.[1]

The horsing of siege batteries has generally presented considerable difficulty, and the work of dragging the guns into position appears to have mostly fallen to the blue-jackets, who seem to have been always willing, and to have greatly distinguished themselves in this respect. The instances, too, where the Navy has landed its heavy guns for siege works, and where they were dragged up tremendous slopes, and over exceptionally difficult ground, are most numerous, but the elaborate nature of modern mountings makes this a matter entirely of ancient history.[2]

The general deficiency of horses on mobilisation is to be made up, according to present arrangements, by taking over horses which are registered by civilian owners for the purpose. But in many expeditions other animals have been found better suited for the work than English horses, and arrangements have been made for purchasing these abroad and shipping them direct to the country to be invaded. Walers have been brought from Australia, mules from America, and camels from India, etc., varying with circumstances; and this direct supply from the best market has great advantages when the difficulty and expense of exporting our horses is considered, and where valuable animals are subjected to the trial of a long voyage in which many are sure to succumb. This exception can only be made in the case of the "Minor Expedition," though the supply may be thus supplemented in the "Serious Invasion."

Every care must be taken in the fitting of transports for horses, and their diet must be carefully attended to when embarked. On the passage from Varna to the Crimea, in many of the ships carrying horses, forage was lacking, although the store-ships carried a plentiful provision at that time. The later miseries of our soldiers in that war, as previously stated, were traced back to the scarcity of forage, which was most difficult to obtain. The same difficulty presented itself in China, 1860,[3] and in the Nile Expedition, 1884. Even compressed forage must always present considerable bulk, making it difficult of transport, and hopes

[1] Alison's "History of Europe," Vol. II., p. 316.
[2] Kinglake's "Crimea" and James's "Naval History."
[3] "War in China," p. 3.

have been always entertained of drawing a plentiful supply from the country.[1]

Attention has been already called to the necessity of exercising horses before using them, as whenever this step has been neglected many have broken down.[2]

The embarkation and disembarkation of horses where it is merely a question of crossing a gang-board is simple, but where they have to be slung from, or into, boats, much care and preparation are necessary.[3] With careful guiding they can be trusted to swim ashore for short distances. It is doubtful whether the blue-jacket is the right sort of man to effect the transfer, owing to his ignorance of horseflesh, and the rider or attendant should always be at hand. When the transport lies off shore, the horses are taken alongside in lighters, and then lifted on board in a horse-box, or by means of a sling passed under their bellies. For disembarkation on service, special boats must be carried.

The ships, being loaded, will either repair to a place of rendezvous, to form a convoy under the protection of a fleet, or will proceed independently to a final port of rendezvous or the base of supplies (according to circumstances varying with the naval strength of the enemy), under arrangements made by our naval officers. On arrival, the question of disembarkation requires grave consideration, except in the case where the base of supplies is some port already in our hands, as Durban in the Zulu War, or in the hands of allies, as Lisbon in Wellington's invasions of Spain, when preparations can have been made beforehand, and where the work of disembarkation differs little from that at a home port. The work, however, may have to be done on an open beach, as in the Crimea, or in some small port lately in the hands of the enemy, where pier, wharf, and store-house accommodation is wholly inadequate, as at Ismailia.[4] Then piers and store-houses must be built, and rules and regulations drawn up for effective working as soon as the first troops have been disembarked to seize the place.

We are not the only nation that has made successful maritime descents; among others the French Expedition to Algeria in 1836, consisting of 37,000 men, and the landing of 80,000 Northerners on the York Town Peninsula in 1862, are examples well carried out. It was not owing to lack of sound and careful preparation, when contending against tremendous difficulties, that prevented Napoleon from despatching his Grand Army of 150,000 men in 1805.[5] He had collected some 1,200 flat-bottomed boats of light draught, capable of propulsion by oars or sail, for the guns, men, and twenty days' provisions; 900 or 1,000 boats for the horses, war material, etc. In this respect he was more careful than we have been. The delay in the landing of the Persian Expedition

[1] "Campagne en Égypte." Berthier.
[2] "War in China," p. 103; "Egyptian Expedition, 1882," p. 51.
[3] "Staff Duties," p. 175; Kinglake, Vol. ii., p. 187.
[4] "Staff Duties," pp. 54-55, and Appendix, p. 375.
[5] "Staff Duties," p. 184.

in 1856 was due to the insufficient number of boats carried in the transports, especially for horses and artillery; the same complaint was made in the Crimea, and in the expedition to Abyssinia it was found that the boats available drew too much water for the shallow landing-place, and there was no skilled labour to construct a pier. Probably after this experience material and men for building piers will never again be forgotten. The difference in time required for landing horses, guns, and stores at a pier, in comparison to that of putting them ashore in open boats, is enormous.

When no piers exist, a special boat has been constructed for landing guns and cavalry. It is of light draught, with little keel, stable, capacious, easily stowed on board ship, and carries ten horses or two guns.[1] The stern consists of a flap, hinged in such a manner that it lowers bodily, forming a convenient gangway from the boat to the shore. These boats were designed when the Indian Cavalry was landed at Cyprus in 1878. In the Crimea, for landing artillery, rafts were extemporised with pontoons or casks overlaid by planks. Two long-boats may be employed in the same manner.

In a few of our expeditions the line of communications throughout most of their length have been along waterways, and this has enabled the supply and transport service to be carried on by boats. The two most recent ones, the Red River and the Nile Expeditions, have had a good deal in common, in that the waterway presented considerable natural difficulties to be overcome in the shape of rapids, cataracts, swift currents, and other obstacles to navigation. But the advantages attending boat transport were sufficiently great to outweigh these disadvantages, for the boat consumes no provisions, as would transport animals and their drivers, and very long distances can be traversed daily without over-fatiguing the men.

The "waler" referred to under "contracts" was the special boat built for the Nile Expedition.[2] It was built to carry twelve men, their equipment, ammunition, and 100 days' rations per man; was suitable for rowing, sailing before a wind, and tracking, for ascending and descending rapids, and for passing over shallows and the rocky beds of rivers. Eight hundred were specially built for the expedition, and they answered their purpose admirably. They were made as light as possible to permit of portage, and, as in the Red River Expedition, were manned by the troops themselves, though Canadian "voyageurs," Kroomen, and Egyptians were also employed in the boats.

In Ashantee, and in China (1860), carriers were employed for transport, and the Coolie Corps of the latter campaign was highly praised for its efficiency.[3]

However the transport may be carried, the rapid pushing forward of supplies to the front is essential. To do this, in many of our "Minor

[1] "Staff Duties," p. 180.
[2] "Soudan Campaign," Vol. I., p. 62.
[3] "War with China in 1860," p. 97.

Expeditions," tremendous difficulties have been contended with (Magdala, Nile, etc.), but British pluck and perseverance have always surmounted them. Much depends on the General of the line of communications, who is responsible for the supplies during transit; and the commandant at the base, who oversees their departure. The importance of the duties of this latter officer have been already referred to, and they do not end till the last man of the expeditionary force has left for home.

V.—CONCLUSION.

Between the writing of the foregoing and the conclusion, a book has been published called "The Great War in England in 1897,"[1] and it contains statements bearing so nearly on the subject as to require attention and criticism. The book deserves to be taken seriously, for it has such obviously good and useful intentions, although it is throughout most exaggerated in tone.

It points out, as has been pointed out here, that our scheme of mobilisation is absolutely untried, and although it is to be hoped that it would not break down so utterly as therein described, yet there are points which seem incapable of bearing much strain, and a rigorous peace trial would appear advisable. It further asserts[2] "that the 2nd Corps, as planned by this grotesque scheme, does not, and cannot, exist; and while the 3rd Corps may possibly stand as regards infantry, because its infantry are all militia, yet it will have neither regular cavalry nor guns. Everyone of the staff is a myth, and the equipment and commissariat arrangements are a complete guarantee of collapse at the outset of mobilisation. What, for instance, can be said of a system in which one unit of the 3rd Cavalry Brigade 'mobilises,' and obtains its 'personal' and part of its 'regimental' equipment at Plymouth; the other part of its regimental paraphernalia, including munitions at Aldershot, and its horses at Dublin?" This is a criticism of the "Home Defence" scheme, but it applies almost equally to mobilisation for the "Serious Invasion," if it is to be possible to embark anything more than 50,000 troops.

That a small force could be landed in England if our enemies have command of the sea is self-evident, but, according to this romance, 300,000 French and Russians are landed on our shores in a few days. This is impossible, if it be true that to find the 457,000 tons of shipping for our 50,000 men is a great strain on our resources. Belonging to the United Kingdom alone, there is 11,563,997, tons of shipping, while France and Russia can only raise 1,544,224 tons between them, and they would require the whole of this as transport for an invasion on such a scale. It is ingeniously suggested that many of the vessels employed were British, but these could not be seized and fitted before the commencement of hostilities, as their capture would be a sure warning of belligerent intentions. Putting the argument conversely—if Russia and France could land 300,000 men here, how simple it should be for us to embark

[1] "The Great War in England in 1897," by W. Le Queux.

[2] Do. Preface, p. 7.

100,000 men, the only requirement being organisation for providing the troops!

Again, undue importance is given to the increased weight of ships' armament in their attacks on land defences. There is little doubt of the power of the shell from a heavy gun to do enormous damage, but it is a necessary factor that it should strike, or burst about, the object to be damaged; and to arrive at this conclusion—as has been pointed out—is the difficulty. Also, the bombardment of defenceless towns would be most unsound strategically, while the enemy had still a powerful fleet near at hand, on account of the expenditure of unreplaceable ammunition and the losses entailed. The allies in this case commit the old French error, so emphasised by Captain Mahan, of aiming at secondary objectives instead of attacking the active force on the high seas—a mistake bound to bring the ruin on their plans depicted in the book, and a similar strategic mistake is made by the troops ashore.

The lesson, however, is, that certain combinations can readily be made against us which have the power to do us irretrievable damage unless we are fully prepared to take the initiative as of old; to be prepared not only to strike suddenly at the savage chief who fails to show sufficient respect to our flag, but also to back up the successes of our Navy by landing our soldiers again on the historic fields of the Continent of Europe.

To attempt to do this with 50,000 men is to court failure, for they could be opposed by active armies of twenty times their strength; but during a great war it is certain that, from the hour we re-establish our Sea Power, a period will occur when our Army, if ready, may act with effect. For this flood-tide it behoves us to be prepared.

"Fronte capillata est, post est occasio calva."[1]

[1] Old Monkish motto—"Take Time by the Forelock."

Wednesday, May 15th, 1895.
Inspector-General of Hospitals and Fleets, WILLIAM H. LLOYD, in the Chair.

ON SHIP VENTILATION AS A DEPARTMENT OF NAVAL HYGIENE.

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AS a single lecture on so wide a subject as "Naval Hygiene" would be too desultory in its nature for the present occasion, I thought it would be more profitable to confine our attention to the department of ship-ventilation, which is now of so much importance.

Introductory Remarks.—Although the physical constitution of the atmosphere, its chemical components and their properties, cannot be exhaustively treated here, there are certain preliminary particulars which, if borne in mind, will greatly assist the comprehension of the subject of ventilation, what it is intended to do, and how this is to be accomplished.

1. The atmosphere which surrounds our globe is many (say 45) miles in depth, gradually increasing in density from its outer surface to the surface of the earth, where its pressure is estimated to be as 15 lbs. to the square inch. To a certain extent it follows the rotation of the earth; but meteorological conditions disturb its equilibrium, and give rise to the trade winds, cyclones, and other aërial currents. The component gases of the atmosphere are by these means mechanically mixed, but their more intimate blending is effected by the law of the diffusion of gases. Moreover, the respiration of animals is so beautifully complementary to that of plants, that the waste of one becomes the pabulum of the other, which is, at least, one factor in the great uniformity of composition everywhere observable in common air. It is curious also to observe that while the food of plants is primarily inorganic, that of animals is necessarily composed of organic matter; but opposite conditions obtain in regard to their respiratory processes. Thus compound substances supply the respiration of plants, while simple elements in mechanical mixture are essential to the respiration of animals. The presence of Lord Rayleigh's new gas, *argon*, would make some little alteration in the general proportion of the constituents; but the old form may still be taken for practical purposes, *i.e.*, oxygen 20·96 vols., nitrogen 79·04 vols., and carbonic acid ·4 per 1,000.

Of the two more essential constituents (*oxygen* and *nitrogen*), nitrogen exists in larger amount, its proportion to the oxygen being nearly as four to one.

This proportion is wisely arranged for, just as with an additional amount of oxygen combustible matter would burn more rapidly, so the vital processes would become more active, and we would live all the faster, if the expression may be allowed. The large dilution of oxygen with nitrogen adds materially to the bulk of the atmosphere, effecting a wider diffusion of light and tending to equalise the influence of heat under the varying conditions of season and climate.

Carbonic acid occurs in the atmosphere as a product of combustion, respiration of animals, and decay of various kinds. It has also a terrestrial service, as in Pyrmont, the "Grotto del Cane," and in coal measures under the name of "choke damp."

When ill-effects result from the incautious burning of charcoal in confined apartments, carbonic oxide would appear to be the special agent in operation. The inhalation of pure carbonic acid induces immediate apnœa, by causing spasmodic closure of the glottis. Nevertheless, a fatal issue is still brought about by carbonic acid, but the source, strange to say, is from within the system itself.

It is commonly supposed that such an impregnation of atmospheric air, as will not be quite sufficient to stop combustion or extinguish flame, may be inhaled with impunity by man, hence the precaution of lowering a light in pump-wells, pits, and such places, to apply this test practically. But it is now well known that a candle may burn in an atmosphere which would quickly bring about insensibility and serious results if inhaled unwittingly.

It is certain, however, on the other hand, that artisans are frequently obliged to resort to expedients to keep their candles alight when at work in the lower parts of ships, as in double bottoms, etc. But this only shows that man may live for some short time where it is difficult to maintain the combustion of flame.

Aqueous vapour exists in the air in very variable amount, being under the influence of climate, temperature, the direction of the winds, and other local conditions; and inasmuch as a perfectly dry atmosphere would prove fatal to both animals and plant, it must be included amongst the necessary components of wholesome air.

Ammonia is evolved by the putrefaction of nitrogenous organic substances. It is also usually absorbed by rain water while falling to the earth, and this would appear to be one of Nature's means of removing it from the atmosphere and giving it to the soil for the benefit of plant life. In any case, it can only be said to be present in comparatively small amount.

The *salts of the ocean* are known to pass up in the air in considerable quantity by the rapid evaporation of finely-divided spray. It is frequently found that books and other things of an absorbent description on board ship become imbued in the lapse of a little time with the chloride of sodium, etc.

Organic matters, whether in simple suspension or more complete diffusion, are often present in the atmosphere. Thus, we find the *débris* of animals and plants, or whole organisms, ranging from those visible to the naked eye to those requiring the highest microscopic powers for their recognition. I have myself found gelatinous fronds of living bacteria attached to floating fibres of wool and cotton, and the same is quite true even of the ground air, which is an atmosphere still below that in which we live. Many curious parts in connection with this interesting subject sustain the so-called "germ theory" of specific diseases, and the ample provision afforded for their dissemination and spread to incredible distances. Now, as organic matter must, sooner or latter, become oxidised, both in air and in water, fresh air must be regarded as the best disinfectant, dispelling noxious principles in an attenuated form, in a manner quite analogous to that by which water washes away those of a grosser kind. Here, then, we are afforded a clear view of the nature and necessity of an efficient ventilation, but this will be practically illustrated in the three following cases:—

1. Let a man be confined in a close chamber, having no communication with the external air, at every expiration a volume of moist, warm air, charged with carbonic acid and deprived of much of its oxygen, will ascend to the ceiling. But after awhile, having suffered sufficient condensation, it will descend again towards the floor, and it is easy to see that a repetition of this process would soon render the air irrespirable,[1] and a fatal issue inevitable.

2. If a single opening were made in the upper part of the same chamber we should only delay the process, for, although diffusion would be favoured, to a certain extent, in this way, the amount of carbonic acid would steadily increase, and the available oxygen would be exhausted, when life could no longer be sustained.

3. Let two distinct openings be made, and a trifling circumstance will convert one of them into an up-take, while the other will convey downwards a fresh supply of air to meet the requirements of respiration.

These conditions may be well illustrated by taking an unstoppered decanter or water-bottle, and observing the effect produced on holding a small wax taper attached to a wire, near the bottom. The little flame will burn brightly for a short time, when it will be seen to grow gradually more and more dim, until it dies out altogether. To complete this experiment, if a slip of cardboard is placed in the neck of the bottle, so as to form a vertical septum, the taper being then introduced will burn to the end. The heated air, charged with carbonic acid, will ascend through the neck on one side of the card, while a current of pure air will continue to descend on the other, and support the combustion of the flame. A central tube, equivalent to a circular septum, will answer the same purpose. The former example would represent Mr. Watson's patent, and the latter that of McKinnell.

About the middle of the last century, similar conditions were made apparent to Mr. Sutton, a brewer, in the case of his own drawing-room,

[1] When twenty-eight parts of the oxygen of the contained air are consumed.

which was large enough to be supplied with three fire-places. He observed that, when a fire was lighted in one of these, the ascensional and extractive force developed was attended with a downcast in the two other chimneys. Mr. Sutton at once grasped the idea, and applied it to the ventilation of ships, utilising the galley fire as an extracting force, and establishing a tubular communication between the ash-pit and the inmost recesses of the ship.

He patented his invention, and charged a sum of £30 for every ship to which it was applied; but at first he met with some opposition at the Admiralty, or rather on the part of Sir Jacob Ackworth, the then surveyor of the Navy, who put the question in reference to the foul air: "Do you know how far you are to draw it out?" The answer was: "Only six inches, for, if I can extract it ever so small a distance, the incumbent air will pass forward, of course, and cause a constant change." Mr. Sutton's patent was nevertheless adopted, and very good reports as to its effectiveness were made to the authorities; but it fell into disuse in a very few years.

From that period to the present the plan of *extraction*, and the *plenum principle* so called, have each had its own supporters; and it will be part of my duty now to inquire into their relative merits, particularly as applicable to ships of modern construction.

In a moral point of view it is quite proverbial that an attractive or drawing force is more effective than a propulsive one, and the same would appear to be the case also in the physical world. Thus it would be easier to extract 1,000 cubic feet of air from the body of a vessel than to force the same bulk of air into it.

The pressure on the contained air would be diminished in one case, so as to induce the ingress of denser air at every opening; while the pressure, though increased in the other, would not only more tardily produce the opposite effect, but favour stagnation in the very localities that would require the most efficient ventilation.

If there is no fallacy in this reasoning, we might conclude that extraction would be preferable to propulsion were we restricted to either, which is, however, by no means likely to be the case.

Extraction may be either superficial, or deep in its effect. To be efficient, it must reach the air contained in the most confined recesses of the ship, where foul effluvia are so apt to stagnate. Superficial extraction, while there is at the same time sufficient provision for simple egress, can scarcely be of such importance.

We know that gases diffuse or commingle with a rapidity which is inversely as the square of their density. Active egress would, therefore, favour the law of diffusion without or outside the body of the vessel; while, by active ingress, or *plenum ventilation*, diffusion can only take place within, and even then with a disadvantage in proportion to the pressure. Moreover, in the former case the air is insensibly renewed, while in the latter cold draught is usually a concomitant.

The ventilation of circumscribed or inclosed spaces should be

made to imitate open-air conditions as nearly as possible, so as to effect a perpetual and insensible change.

This is clearly to be brought about by free ingress and active egress more satisfactorily than by active ingress without provision for simple egress.

I have always thought that much important information respecting the theoretical part of an efficient ventilation is to be derived from the study of the respiratory process in the members of the lower creation.

Perhaps the most complex system of respiratory mechanism occurs amongst the *insecta*. All insects have a system of ramifying tracheæ, and in the greater number the respiration is aërial, the air being inhaled through a series of stigmata, which are generally situated on the sides of the rings of the abdomen. From the stigmata the air is carried by the tracheæ, in some insects into vesicles, from which the rest of the tracheal tubes arise; in others, into longitudinal trunks, which ramify throughout the most delicate parts of the animal. In several insects, particularly in the *orthoptera*, there are distinct respiratory movements, *i.e.*, alternate dilatation and contraction of the abdomen.

Comparing the hull of a ship with the body of an insect, and the several decks and bulk-headed spaces within the web of the vessel with the internal organisation of the animal, all the ports, hatches, and scuttles, with the air shafts, aptly represent the spiracles, or breathing pores, and the tracheæ, or air vessels, leading from them inwards, to be distributed to the nervous ganglia and the viscera.

The practical lesson to be drawn from this comparison is that just as every part of the insect is separately supplied with air, so should every part of a ship, as far as possible, be separately ventilated.

In animals higher in the scale the blood is aërated by means of gills or lungs, as the case may be, occupying a definite and convenient locality, but always in some degree associated with the function of locomotion. Even in man himself increased muscular movement in quick walking or running is always attended with a corresponding acceleration of pulse and activity in the respiratory process. In the *crustacea*, *i.e.*, crabs, lobsters, and shrimps, we find the gills quite near, or actually connected with, the base of the limbs, so that the activity of locomotion should induce, *pari passu*, the exercise of the function of respiration.

In the *bivalve mollusca* the lamellated branchiæ are in strict relationship with the energetic use of the foot, as in the common cockle (*cardium*) and the *trigonia*, or the flapping of the shells and mantle lobes, as in the genus *lima*, some of which are swimming members of the scallop family. Still further, amongst the various uses to which *vibratile cilia* are applied, we find that these organs are richly bestowed upon the respiratory apparatus of most water breathers; and swimmerets and flabella, such as we see in the *crustacea*, are only organs on a larger scale, wielded by muscular power for a similar purpose, namely, to bring fresh currents of water charged with vital air, to the respiratory surfaces when the locomotive function of the animal is not in exercise. We perceive then, that the

office of the *cilia* and other propulsive organs in the watery medium is just what the rotatory fan or other mechanical power would be for ventilation in air.

From the *tunicata* and *conchifera* unquestionably one valuable hint is derivable, namely, that there is always provision made for the escape of the inspired water by a special channel or siphon, quite distinct from that by which it entered, and it need scarcely be said that this very thing is a great desideratum in our modern ships. But the most important item has yet to be mentioned, namely, that in the examples here adduced while ingress is *comparatively* passive, egress is usually active, and spurting is only a further exercise of the same activity. The examples here selected, from the realm of zoology, show very clearly the essential importance of respiration in animals, and its intimate bearing on the subject of ventilation.

The rotatory fan is to ship ventilation what ciliary motion is to the gill of the oyster; and it is curious to remark that, though now so popular and important, when first tried by the inventor, Desagulier, on board H.M.S. "Kinsale," at Woolwich, it did not meet with the approval of Sir Jacob Ackworth, who condemned it without having once witnessed its operation.

Though many improvements on the original design have been made and patented from time to time, we cannot discuss their respective merits on the present occasion, being desirous of dealing with particulars only so far as they bear upon broad principles.

The ventilation fans commonly used in H.M. ships are of three kinds, viz.:—

1. A fan with both sides open, and commonly used for all ordinary supply purposes.

2. A fan with only one side inlet, used when the air is conveyed to the fan by a trunk, which it is not convenient to deride.

3. A fan similar to the first, but having a diaphragm in the middle, which makes it equivalent to two single-sided fans. Used chiefly for exhaust, when the trunks for conveying the air to the sides of the fan-case vary in length.

The supply fans usually fitted in the Royal Navy, vary from 3 to 6 feet in diameter, but, in cases where the escaping air would have no suitable upcast, exhaust fans are employed.

Blackman's fans, which are not centrifugal, are suitable for moving air in cabins. Two were supplied to the "Royal Sovereign" for this purpose.

Records of the result of experiments as to the volume of air in cubic feet per minute delivered by different fans, under different conditions, are both interesting and instructive.

TABLE I.

Showing the Quantities of Air delivered by various Fans per Minute.

Kind of Fan and Name of Ship.		Diameter of Fan.	Revolutions per Minute.	Area of Delivery.	Length of Air Trunk.	Volume of Air in Cubic Feet per Minute.	
1st	Rupert	5′ 4″	408	5 sq. ft.	52 ft.	18,200	(*a*)
,,	,,	5′ 4″	512	1½ ,,	,, ,,	9,800	(*a*)
2nd	Royal Sovereign	5′ 6″	400	(Suction) 4⅓ sq. ft.	140 ,,	12,270	(*b*)
1st	,,	6′ 0″	400	8 ,,	16 ,,	17,500	(*c*)
3rd	Howe	3′ 0″	500	(Suction) 2 sq. ft.	60 ,,	2,900	(*d*)
,,	Trafalgar	6′ 0″	200	7 ,,	18 ,,	18,000	(*e*)
,,	Impérieuse	3′ 6″	280	Fan inlet 2·4 sq. ft.	—	2,041	(*f*)
,,	,,	,, ,,	500	,, ,,	—	4,700	(*f*)
,,	Edinburgh	3′ 0″	300	1 ,,	24 ,,	1,200	
—	Experiments, Lloyds	3′ 0″	360	1¼ ,,	10 ,,	1,390	(*g*)
—	,,	3′ 0″	640	½ ,,	,, ,,	1,480	(*g*)

Remarks.—(See right-hand column.)

(*a*) This shows the advantage of a large delivery over a small one.

(*b*) The speed of air was taken at the inlet, the air was delivered through a long trunk with numerous louvres.

(*c*) The speed of air in this case was taken at the delivery.

(*d*) Two branches of 1 square foot area each. One was 8 feet nearer the fan than the other: the nearest trunk took in 1,900 cubic feet per minute, the other 1,000 cubic feet per minute.

(*e*) The fan had a long and short suction: the speed of air in the long suction could not be measured; the short suction was taking 12,000 cubic feet out of the 18,000 delivered.

(*f*) Carpel's patent fan.

(*g*) This shows that, with about half the number of revolutions, nearly the same quantity of air was passed through the larger delivery.

The following list shows the relative number of supply and exhaust fans fitted in some of H.M. ships, and even a superficial review of it will make it obvious that, while the principle of extraction is not altogether ignored, the preference is given to plenum ventilation:—

TABLE II.

Comparison of Supply with Exhaust Fans.

Name of Ship.	Supply. No.	Supply. Diam. of Fan.	Exhaust. No.	Exhaust. Diam. of Fan.
Thunderer	4	5′ 6″	4	4′ 6″
Devastation	4	5′ 6″	4	4′ 6″
Trafalgar	4	4′ 0″	3	two 6′ 0″ one 4′ 0″
Nile	4	4′ 6″	3	4′ 6″
Impérieuse	4	4′ 6″	2	3′ 6″
Edinburgh	6	4′ 1″	2	3′ 0″
Collossus	6	4′ 6″	2	3′ 0″
Vulcan	2	4′ 0″	2	4′ 0″
Inflexible	8	4′ 0″	1	3′ 3″
Polyphemus	2	one 4′ 0″ „ 3′ 0″	1	3′ 6″
Howe	5	4′ 0″	1	3′ 0″
Anson	4	4′ 0″	1	3′ 0″
Camperdown	4	4′ 0″	1	3′ 0″
Royal Sovereign	12	six 6′ 0″ „ 5′ 6″	—	—
Dreadnaught	6	4′ 0″	—	—
Royal Arthur	5	four 5′ 0″ one 3′ 0″	—	—
Neptune	4	4′ 0″	—	—
Collingwood	4	4′ 0″	—	—
Severn	2	4′ 0″	—	—
Galatea	2	3′ 0″	—	—
Barossa	2	3′ 0″	—	—
Barham	2	3′ 0″	—	—
Bellona	2	3′ 0″	—	—
Calliope	1	3′ 0″	—	—

On inspection of the foregoing table it will be seen that, out of twenty-four ships, eleven—or nearly half the number—are without any mechanism for extraction; that there are five with only one exhaust fan, four with two, two with three, and the same number with four; while in every case, except the last on the list, two or more supply-fans will be found. In the "Royal Arthur" with five, the "Dreadnaught" with six, and the "Royal Sovereign" with twelve large supply fans, it is remarkable that no exhaust fans should have been found necessary. Now, I should be sorry to say that our war-ships were not efficiently ventilated; but it may be very fairly asked if, in the interest of shipping in general, the system at present so much in vogue might not be reversed with advantage, so that extraction of vitiated air from the deeper recesses of a ship should commence, and natural law complete, the cycle of a more efficient ventilation.

It is much to be regretted that ventilating requirements have hitherto been so little taken into account coincidently with the designing of ships of new construction. Ships have thus been too often built first and ventilated afterwards, so that in the effort to carry out some rational ventilating principles, constructional barriers are sure to present them-

selves; whereas if sound ventilating provisions went hand-in-hand with construction, after-thoughts would be precluded, and making and breaking avoided.

In the old days of wooden ships, the honey-combed, inaccessible, and consequently filthy bilges have always presented a difficult problem for the hygienist to master; but if, in the first instance, they were made smooth and accessible, though still, if need be, the recipients of drip, thorough cleansing would be practicable, and any sensible deviations in the opposite direction would be promptly remedied.

As other nations have shared with us in bilge troubles, the suggestions made by their hygienists may be instructive to ourselves; thus, in an excellent pamphlet by Dr. Eklund, of Stockholm, he advocates the use of superheated steam for drying and disinfecting not only the bilges, but the openings between the timbers. He strongly advocates such an enlargement of the bilge areas as would be sufficient to permit a middle-sized man to enter them, that they might thus be easily and perfectly cleaned and dried. He also alludes to the usual flatness of the bilges, through so considerable an extent of the square body in modern ships, as being favourable to the permanent accumulation of water in certain parts beyond the influence of the pump-suckers. Dr. Eklund, however, advocates the adoption of a reservoir for bilge air fore and aft upon the keelson, which would presumably take up bilge-effluvia as fast as they were formed, and thus confine them within definite limits, and at the same time permit of their speedy removal by extractive means. I cannot go the whole length with Dr. Eklund in this suggestion.

Hygienic measures, like many others, often become questions of expediency; even admitting that certain sanitary conditions can be effected at a definite cost, it is only fair to ask, Would the benefit to be derived so far exceed the necessary expenditure of space as to render the proposal feasible or expedient?

Many years ago I submitted a paper to the Admiralty suggesting the substitution of tubular ventilating shelf-pieces for the existing solid ones, with the view of providing for the removal of the foul air finding access to the openings between the timbers, and so frequently the source of ill-health and discomfort in wooden ships. The authorities to whom the paper was referred for judgment were good enough to say that "the plan was well conceived, and very clearly described both in principle and detail," but they could not recommend its adoption for several reasons, which, however, did not in any way challenge its practicability. I believe that one of the principal reasons was that wood was to be superseded by iron.

Experience has proved, even without reference to the anatomy of the insect, that the principal parts of a ship requiring ventilation should be furnished with separate outlets of their own. The principal parts comprehended in this proposition are:—Firstly, the bilge and orlop, for the ventilation of which the shelf-piece supporting the main deck should be tubular, with its conduits leading chiefly into the funnel or funnel casing. Secondly, the lower deck, which should be ventilated by the

ship's side, with louvre openings above. Thirdly, the main deck, the ventilation of which will be much improved by means of deck air-channels fitted into the upper deck. Notwithstanding the great difference in the constructive elements, wood and iron, I have had ample means of observing that the most ordinary ingenuity can make provision for the adoption in iron ships of the same principles of ventilation that have been found effective in wooden ones.

I am quite sure that there is a great deal yet to be done in this way.

The peculiar construction of low free-board vessels, in which all communication with the outer air is reduced to a minimum, seems to have suggested the necessity of introducing air by mechanical means to compensate for that which, under ordinary circumstances, would be permitted to enter without obstruction. The *plenum* principle has, without exception, been adopted in the ventilation of those ships, and under the circumstances was quite unavoidable. So, until we have fully weighed all the attending conditions, we must be cautious in our condemnation of its employment.

It is certain, however, that where simple or natural ventilation is more or less precluded, both the movement and the renewal of the air can be more satisfactorily effected by extraction than by propulsion, or the *plenum* principle.

A friend of mine in Yorkshire succeeded in patenting a scheme of extraction by heat very similar to that of Mr. Sutton, only applied to the ventilation of drains instead of ships. Some interesting particulars were developed in its practical trial, and the patentee, as usual, acquired new light as to the intrinsic nature of the difficulties with which he had to contend.

A conduit from the main drain was led into the ashpit of the inventor's mill, and the foul air was drawn up so forcibly as to keep the fan of a large anemometer in rapid revolution, indicating the extraction of thousands of cubic feet per minute. This all appeared to be satisfactory, and so it was within a certain radius, for it was found that the effect beyond this was scarcely perceptible.

It was, therefore, quite obvious that numerous centres of action must be set up (each having a range of its own), to act together and answer the purpose, even in a very small town. This is exactly what we find with respect to ship-ventilation, which, to be efficient, must be furnished with several centres of action.

As bearing upon the effect of persistent draught, it might be mentioned that rats, which were very plentiful in the drains before the extracting currents were established, were quite driven away from the immediate vicinity.

On the other hand, it has been found that, in ships where the contained air has been subjected to much pressure by impulsion, asthmatic persons breathe with great comfort and satisfaction; and from this we may learn that a compressed-air chamber would be a valuable addition to public hospitals, and we can comprehend more clearly the therapeutic action of such air in a portable form, under very critical circumstances.

The CHAIRMAN: I think we must have all listened with very great interest to this paper by Inspector John Macdonald. We may look upon him as the father of modern sanitary science on board ship, as he has made the subject almost his own. I hope there are some amongst those gentlemen present who will contribute to our knowledge on the subject. I think we may infer from what we have heard that the principle of the supply of pure air by artificial means is now recognised as to be applied to all new ships, according to their structural requirements, and this principle appears to have had a very fair amount of success, as will, I think, be acknowledged by those who have watched the change of ships from the old type, and have seen notwithstanding how great has been the improvement in the health of the Navy. Perhaps the most practical point for discussion would be in the direction of the advisability of supplementing the supply by the addition of artificial means of extraction of impure air; and there is also the question of bilges. I hope we may get some enlightenment upon these points.

Admiral CLEVELAND: I rise, not to take part in a discussion of the paper, because it seems to me there is no controversial matter whatever in it, but I wish to thank Dr. Macdonald for having brought before the public, through the medium of this Institution, such a very valuable subject as the ventilation of our ships. Ever since I have known Dr. Macdonald he has always been identified in my mind with the practical work which he has done in this direction. I remember in the Mediterranean many years ago our ships were ventilated on a system which Dr. Macdonald brought before the Admiral, which tended in great measure to keep the ships healthy and comfortable. I regret very much he has told us so little as to what has been done in recent times to carry this out systematically and scientifically, but I thoroughly agree with him that the "extractive" system is the scientific one we ought to pursue, and I regret so little has been done in this direction. I also regret that the audience here to-day has been so small; no doubt owing to the weather being so fine. There is one precaution which ought to be taken in all systems of ventilating ships, and it is this, that in case of fire we should have some ready and efficient means of shutting off the ventilation from any particular locality. That is a mere matter of detail, but still it is a matter always to be kept in view. I thank Dr. Macdonald very much indeed for having brought this subject before us, and I hope it will bear fruit.

Dr. MACDONALD, on the invitation of the Chairman, added the following remarks on Respiration:—

THE RESPIRATORY PROCESSES IN THE LOWER ANIMALS.

Oxygen gas is of vital importance to all the forms of animal life upon this globe, whether marine, aquatic or terrestrial. Atmospheric air is more actively absorbed by fresh than by salt water, the capacity for it being considerably greater in the former than in the latter.

Animals living in the open-air can, if necessary, change their immediate atmosphere by locomotion from one place to another, and animals free to move in water do virtually the same thing. But, where marine animals are fixed to the same spot as barnacles or limpets, an outgoing as well as an incoming current must be provided for, and even with external stillness no internal stagnation is permitted to take place. In fact, extraction or egress must either alternate or be concomitant with ingress, and the condition of the animals under the circumstances may be accurately compared to that of the residents in houses or on ship board, as the case may be. Should the watery medium carrying their atmosphere, so to speak, suffer stagnation, ventilation, in the strictest sense of the term, will consist in giving motion to that medium by purely mechanical means, by vibratile cilia flabella, or by muscular power exerting pressure, or wielding flabella to effect the necessary displacement and interchange.

No satisfactory explanation has yet been given as to the intrinsic cause of ciliary motion. Like many other things in nature, we are permitted to observe it

without really comprehending its true cause or *modus operandi*. The uses to which this remarkable power is applied in the animal world are so varied and important, that it would be easy to fill a volume with the abstract facts.

These minute hair-like organs, exerting an impulse in a definite direction, effect the locomotion of the infusorial animalcules, and indeed of animals of much larger size, as the *turbellaria*, and when thrown into action on the head lobes of the common *rotifer* produce a little vortex in the water, bringing fresh supplies to the mouth of the animal. The successive or sequencial impulse of the marginal cilia give rise to the appearance of rotation, and hence the popular and very appropriate name of wheel animalcules as applied to *rotifera*. All respiratory surfaces, whether hollow pulmonary chambers or projecting branches or gills, are invested with vibratile cilia, which materially assist the regular respiratory currents, and are perhaps intimately associated with the separation of the air contained in the water and its coincident absorption.

However extended our study may be as to the bearing of the process of respiration on the subject of ventilation, one grand lesson is clearly derivable from it, namely, that provision is always made for the perpetual and thorough removal of the currents passing over the respiratory organs, so as to preclude the possibility of stagnation or bilge-like accumulations anywhere.

Ingress and egress in a continuous line is best illustrated in the case of the *tunicaries* called *salpians*, a good example of which occurs in the genus *pegea*. It is fish-like in form, quite tubular, and open at both ends. Motion is given to the organism by the contraction of hoop-like muscular bands which propel it through the water, at the same time sending a strong respiratory current through the central cavity.

In ordinary fishes, the manner in which the water entering by the mouth passes first over the gills and then outwards beneath the operculum is too well known to require further comment here; but it may be remarked that a system of ventilation of this description would be too forcible for common purposes.

The CHAIRMAN: I am sure we must all feel obliged to Dr. Macdonald for coming here and giving us a very excellent paper. I hope it will do some good. Of course, the direction in which he wishes change to be made is towards the extraction of impure air, and I am sorry no one else has been able to give us any information on the subject. However, I think I may assume that we all thank him for his paper.

Dr. MACDONALD: I am much obliged to you. I am very glad to have brought the subject forward, and thank you for the kind manner in which my paper has been received. Of course, the matter of ventilation is one which has been dealt with in various ways, but I am very glad that it has been so far "aired"; and it will, no doubt, benefit by being brought forward at this Institution.

ECONOMICAL ARMY REFORM.

By Captain F. N. MAUDE, late R.E.

THE subject of Army Reform is a difficult one to deal with in this Journal. Nevertheless, there are some fundamental principles involved, so generally recognised by all parties, that a few lines in explanation of the limitations these principles suffer in practice, owing to conditions peculiar to all armies in a state of transition, may, it is hoped, prove of service to all who are endeavouring to solve the problem of a maximum degree of efficiency in our Army for a minimum expenditure.

Speaking generally, the tendency of all serious reformers is to approximate our military organisation to the model of our great commercial institutions, railways, shipping companies, and the like, the key-stone of whose efficiency is "decentralisation," and there can be no doubt that this tendency is a right one. Unfortunately in all these schemes the difference in the conditions under which these commercial undertakings and the Army have to work is left entirely out of sight, and a rate of progress is consequently anticipated which cannot conceivably be attained. Hence impatience results and rival reformers clamour to dig the whole plant up by the roots and try transplanting it elsewhere. This system rarely answers in horticulture, and, therefore, reasoning by analogy, I doubt very much if it will be more successful in the Army.

Actually, the seed of "decentralisation" is planted in the Army, and its progress has been as rapid as circumstances have permitted. Why it has failed to do better, it is the object of this paper to explain.

The broad contrast is this: the Army is organised primarily for war, but remains normally at peace; our great commercial undertakings, railways, canals, etc, are permanently at war, and never at peace.

The railway company, for instance, is always at war against the public, the shareholders, and the elements. The Army is now and again at war with death, disease, bullets, and the public, and must always be ready within a limit of days, dependent on the efficiency of the Navy, to meet the utmost demand that can be made upon it.

To bring the two down to a common basis of comparison, we must imagine our railways, say the North-Western, as a concrete case, working under the following conditions:—

No dividends to be earned, and a minimum of money to be expended for an uncertain term of years. One-half of the staff only to be maintained, but to be capable of expansion at twenty-four hours' notice. Only an occasional train to be run for the training of the staff, and yet locomotives, drivers, permanent-way department, every one down to the greasers, capable of meeting and dealing with the present August traffic at an uncertain date in the future; and even that does not make the comparison complete—the average risk to life and limb to every man

throughout the Service must be just one hundredfold what it is at present; but this, under the supposed conditions, would doubtless arrange itself without further trouble.

Now imagine the working of such a line after twenty years of profound quietude, and with no particular prospect of immediate activity in the future. New engines, new rolling stock, new signalling, and all the consequences they involve, must be provided for; and where is the experience to guide men in their choice to come from?

If the sense of duty were as high in the railway service as it is in the Army, there is no reason to suppose that it would be higher, the best men would be selected to attend the trial trips and spasmodic moments of activity of other railways often acting under totally different conditions; but who is to collate the results, and, above all, who is to select the men to report on them? Let every business man imagine his own concern working under these conditions, and supply his own answer.

The above will have sufficed to clear the ground, and to show that the question of Army reform is not quite so simple as our amateurs imagine. Let us now consider the working of the Army organisation as we find it. First, we must trace its history.

Our existing organisation was fundamentally evolved in a period of almost chronic warfare. The Crown contracted with a number of men for the supply of certain regiments and the execution of certain duties, in return for which the contractors were granted certain privileges and advantages. Each of these contractors sublet his contract to a given number of smaller men, who again, in return for certain privileges, made themselves responsible for the fighting efficiency of a given number of men—these were the company commanders—hence the purchase system and its justification. Things were working out their own salvation, and very practically so too, when in the Prussian Army—which even then led the tactical fashions of the day—a break in the continuity of conditions intervened.

There came a long spell of peace, and necessities of the parade ground received more attention than they deserved. Everything was sacrificed to mechanical accuracy in the execution of manœuvres, and these were much simplified by subdividing the battalion into equal divisions—generally eight—which no longer corresponded with number or strength of the companies. This process is technically known as "equalising the companies," and insignificant as the detail seems, it ultimately led to the Prussian disaster on the field of Jena, and to the semi-paralysis under which we have long been suffering.

For the captain of the company now no longer of necessity commanded his men, and hence his immediate responsibility for their fighting efficiency ceased, consequently his interest in their training died out. The colonel and the adjutant alone became responsible, and in peace time they sufficed for themselves.

Simultaneously, as a consequence of the prevalence of peace and the long-service conditions everywhere existing, very few recruits came in annually to the colours. They could easily be trained by a single man,

and so they were handed over to a specialist, who took all the trouble of their education off the officers' shoulders. One other point requires to be mentioned. As long as war was chronic the young soldier was handed over to the charge of two or three old soldiers, who, by long experience, were thoroughly acquainted with every minor trick of the game; and since at any moment in the spring campaign their lives might depend on his knowledge, they had the strongest possible interest to see that he made the most of his opportunities. The custom was thus essentially practical as long as the conditions remained the same, but when peace became the normal a result ensued which was entirely unexpected, and proved exceedingly unwelcome. As the war-seasoned veterans passed out of the regiment, the tradition of minor expedients died with them, and the old soldiers had nothing to teach but the bad habits they had themselves acquired, of getting through their duty with the minimum friction and punishment; and it would have been well if the evil had stopped there, for they also taught the youngsters their special vices, and it is from this cause that the prevailing prejudice against standing armies exists—a prejudice only too well founded at the time; for an idle, long-service Army of necessity eats its own heart out.

The above is a very compressed summary of the causes at work, but students of history can easily verify the results by tracing the downfall of the Prussian Army during the period after the Seven Years' War up to Jena, and the troubles in our own subsequent to the Peninsular War and Waterloo. Our constant little wars saved us from experiencing the full consequences; but what these would have been had we been called on in 1870 to face a storm similar to that which burst over France, we can learn from her disasters, for the two armies were very much on the same level.

Curiously, it was one of the strongest and best characteristics of our race—the delight in power and responsibility—which aggravated our case.

What happened after Waterloo was briefly this. Colonels and adjutants, finding the task of commanding 1,000 long-service men in peace time well within their capacity, gradually absorbed the whole power into their own hands, not out of innate viciousness, but from a love of work and uniformity. The captains, finding their occupation gone, nothing for them to do but to repeat words of command, very willingly met their superiors half-way, accepted as much leave as they could get, and forgot entirely to think of their subalterns, who grew up in ignorance and idleness. As by degrees each rank died out or retired, the young officers who had never been taught, either by precept or experience, succeeded to the command. Generally the men with most energy and ability, tired of idleness, sold out at a comparatively early age, and the least useful ones stayed on to realise the full value of their commissions. Not being entirely without latent judgment, they selected as their adjutants the smartest and most energetic men they could find, who promptly usurped all authority they could lay their hands on. If there is one thing worse than a colonel and adjutant's regiment it is an adjutant and sergeant-major's regiment, and to this all our regiments must

ultimately inevitably have come, had not our little wars from time to time brought us in contact with the conditions for which we were originally organised.

But the evil did not cease here. The incapable colonels in course of time became still more incapable generals, and the training of the Army instead of being calculated to meet an enemy in the field, was modelled to suit the convenience and ineptitude of ignorant inspectors. There was consequently no incentive to the able and energetic young officers to master their profession, but every motive was supplied them to pander to the inspectors' vanity, and the greater the degree of decentralisation, the greater became the evil.

Further, there being no incentive to the young officer to master his profession; with a falling demand the supply naturally diminished. Those generals, therefore, who wished to supply themselves with a competent staff found their area of choice distinctly restricted. Having no means of ascertaining the real value of a young officer they chose those with whom they were best acquainted, viz., their nephews and relations, which was the only course available to them; and the less capable amongst them, untrained to the responsibilities of independent decision, consulted their wives and abode by their selection; but women are hardly the most competent judges of these matters. To make matters worse, those arms—the cavalry and artillery—which depend specially for their efficiency on the genius and judgment of their inspectors, were handed over to the care of ex-infantry officers, who, as regards a horse or a gun, could only distinguish between fatness in the one, and glitter and polish in the other. The cavalry suffered less than might have been expected, for a cavalry colonel was too big a man to be over-ridden by an ex-colonel of foot; but they sank very low, and in the effort to satisfy the cult of the fat horse they forgot that speed and the power of delivering a charge knee to knee was the primary object of their existence. Not ten years ago the practice of charging on the drill ground was strongly deprecated, for the reason that it tended to letting the horses get out of hand, and movements "to the halt," "at a walk" occupied most of their time. The artillery suffered more, for the battery commander was too humble a person to beard a divisional general, and since in peace time the only road to advancement lay in attention to the fads of the inspecting officer, the battery commander having a unit on which he could, thanks to its limited numbers, impress the stamp of his own personality, succeeded along this line better than any other Service. Our batteries had the sleekest horses, and shiniest harness in Europe, but unfortunately they could neither march nor shoot, which purposes formed their sole *raison d'être*.

In Prussia circumstances had compelled military organisation into other courses. As a consequence of the sufferings inflicted during the Napoleonic era, the nation had been compelled to adopt the principle of universal liability to service—not the same thing as conscription. This threw into every battalion and regiment from 33 to 50 per cent. of recruits annually, a number which could not be dealt with by the adjutant

and sergeant-major. Hence the responsibility for the efficiency of the recruits was again thrown on the company officers and squadron leaders. The full consequences did not ensue immediately; for some forty years, like the children of Israel, they too underwent their wanderings, suffering from infantry officers inspecting cavalry, and war-weary veterans carrying out the duties in which they had ceased to take any interest; but at length the dawn began to break. About ten years before Moltke and the old King came into power, a new generation of young officers had come into being, who had learnt the details of their profession from the very foundation upwards, and without whose loyal aid not Moltke, not even Napoleon himself, could have effected anything; for with the monster armies universal service supplied, leading in the Napoleonic sense of the term had ceased to be practicable, and a devolution of responsibility had become imperative, and this was alone rendered possible by the existence of this class of young officer referred to above.

The young officers had found out for themselves that if you want to teach others you must first learn yourself, and since with the advent of Moltke success in the business of teaching, as measured by the efficiency of their commands, was the sole avenue of success, the keenest rivalry set in, and by a process of trial and error a sound and practicable system of training was arrived at.

Things were still in a transition stage when the wars of 1866 and 1870 came upon them. Many of the old school still survived in the intermediate ranks and even in the lower ones, for the Prussians are intensely conservative; and wherever cases of unusual loss incommensurate with the tactical gain occurred during those wars, analysis will show that the result was not due to the nature of the weapons employed, but to the bungling ineptitude of those particular commanders. Yet how great the advance had been is proved by the nett results of the campaigns themselves, and testified to by the evidence of all competent observers.

Since the war they have continued on the same lines with redoubled vigour, and the consequence is that at the present moment the German Army, and particularly the Prussian section of it, has reached a degree of efficiency beyond that ever yet attained by any other army in *peace time*, and there is every reasonable guarantee that the standard reached will be permanently retained.

The points to notice are, that it was the fortuitous conjunction of two factors. Moltke and the King representing the survival of true warlike tradition on the one hand, and the crop of young, energetic and practical officers which short service had, so to speak, unintentionally evolved on the other. Without the practical system of inspection due to the former, the young officers could have achieved nothing more than our own artilleryman succeeded in obtaining, viz., fat horses and polished harness, with all the drawbacks the existence of these imply; and without the young officers bred by decentralisation, neither Moltke nor any one else could have attained anything worth the attainment at all.

We have copied in a modified form, as our circumstances compelled us, the principle of short service; but we have omitted the essential

feature of its success in Germany, and the omission is not to be wondered at, when we remember that the German originators of the system themselves failed to grasp where it would lead them.

The point for us to consider now is, whether the time has not come to take the final step yet needed to secure real efficiency.

To have attempted it in 1870 would have been premature, for in those days neither the trained inspectors existed, nor yet even the junior officers capable of being at once entrusted with the responsibility the change would have involved. It is the duty of the short-service company squadron or battery officer to teach his men the essentials of minor tactics which they can no longer pick up from their veteran comrades, and drill, with all that is implied by the application of drill, in the field. But thanks to the conditions induced by years of long service in peace, the young officers knew even less about these things than the men, for it had been nobody's business to teach them.

Consequently a period of inaction was inevitable, and the authorities took the best step opened to them at the time in enforcing examinations for promotion as a first step. Even this step was not without its risks and drawbacks; for military knowledge was in such a chaotic condition—both in England and elsewhere—that it was difficult to know what to teach or how to examine; but the necessity of study of some kind compelled men to use their intellect, and the ultimate problems of war being inevitably very simple, by degrees common-sense principles are beginning to assert themselves, and the fads and dross of earlier years are rapidly being shed.

The value of our little wars now began to assert itself. However much the conditions may vary even between two different expeditions, and however great the contrast between a great European conflict and a Burmese jungle scrimmage, one element is common to all, viz., danger; and the airy fabrics of the peace-time experimentalists, based on the weapon and not on the man, vanish like clouds in the sunshine before the touch of the bullet, irrespective of which end of the weapon it was originally inserted at. Hence our progress has been relatively more rapid than that of the Prussians during the first fifty years of the century, it is barely twenty-five years since we made the great change, and the essential factor forced on the former by the shorter term of service supplying more recruits has not yet found root in our Army; but still in all-round tactical knowledge we are decidedly in advance of the limit attained by them in 1866. Small wars, too, and our fortunate adherence to monarchical institutions have also brought good men to the front, still in their full physical vigour, and hence an adequate supply of competent inspecting officers can be vouched for.

We have evidence enough to prove that it will pay, that it is not owing to any racial idiosyncrasy that the results in Prussia have been so exceptional; and, indeed, who, knowing the nature of the two races, could be in doubt on the point? The average uncorrupted Englishman revels in responsibility, the average untrained German shuns it; this is the universal consensus of commercial experience, and if, nowadays, we are suffering more than ever under German trade competition, the fact that in

the German Army all ranks are trained to the acceptance of responsibility probably supplies the answer. Some ten years ago an exact copy of the Prussian squadron system was introduced into the 19th Hussars by the late Colonel Percy Barrow. In spite of the circumstances of the moment, viz., that the regiment was on active service; and in spite of the premature death of its introducer, that regiment raised itself head and shoulders above all its competitors within the short space of six years, and on the eve of its embarkation for India—though the average service of the men in the ranks was decidedly below that in a good Prussian regiment—its efficiency, skill in manœuvring, and discipline were fully up to their best standard, which no expert would have dared to allege of any other regiment in the Service. In India Lord Roberts appointed a first-rate inspector-general for the artillery, in which arm the tradition of decentralisation has always been maintained, and again the results were astounding; where formerly the cult of the fat horse and polished harness had alone been in existence, the inspector-general had only to lay down a high standard of shooting and mobility to at once obtain it. The inspector-general of cavalry though fully the equal of his artillery colleague, had the mortification to see many of his best hopes temporarily frustrated by the general inability of regimental officers, even with the best will in the world, to emancipate themselves at once from the traditions, literally, of ages.

I trust I have now made it clear that the Army stands in no need of heroic measures; what we chiefly require is that the public should stand clear and let us work out our own salvation. True, healthy reform can only be conceived by the operation of two causes—competent inspectors and capable subordinates. For the first time for many ages these two causes synchronise, and had best be left to their own devices.

To attempt to re-organise the Service by the expedients suggested by Lord Hartington's commission, the substitution of a civilian head to the Army in place of a Royal Commander-in-chief, or by any other of the methods freely recommended by irresponsible newspaper correspondents, is to rebuild the house from the roof downwards. A wise engineer begins, as a rule, with the foundation first.

Briefly, all we require is that the initiative and zeal of the junior ranks should be allowed free play, controlled only by competent inspection, which, moreover, must be free from the merest suspicion of political partisanship. This last is the rock on which French efforts at re-organisation have principally split, and which nullifies all their attempts to learn from their conquerors. They have copied the German system with Chinese-like accuracy, but the results are painfully short of their expectations, and for this reason alone, that Republican forms are totally incompatible with the organisation of victory *in times of peace;* though given adequate time they may succeed under pressure of war, but only at a cost of life and money beyond all comparison with the cost at which the same result can be attained by nations more favourably situated. To adopt any of the various panaceas recently put forward, would be voluntarily to incur their liabilities; and unfortunately these schemes

commend themselves to many able minds in this country, who for want of time and study have failed to realise the conditions which differentiate Army organisation from commercial undertakings—a difference to which I have called attention above.

Even without the addition of a farthing to the Army Estimates, the reform I advocate, viz., delegation of responsibility for the drill efficiency of their commands to the company and squadron officers of the army, would quadruple our efficiency within the space of five years; but the results would be far greater if money could be found to carry out the augmentation of the infantry by some 11,000 men, so often recommended by Lord Wolseley, and the increase in establishment of horses needed by the cavalry, and of both guns and horses to the artillery.

Under the existing system, an infantry captain's work is robbed of all interest by seeing his company annually stripped of all his best men to furnish the drafts for India; he has hardly time to learn their names before they are taken away, and the work has to begin *de novo*. The keen cavalry soldier with sometimes barely twenty horses to call his own, where he should have 120, finds his consolation in his club in town, pouring out his grievances into the ear of any sympathetic listener; and the gunner, though proud of the responsibility his regimental tradition accords him, has his heart broken by want of ammunition for practice and want of teams to drill his command.

As matters stand at present, out of every 100 officers we lose the best energies of ninety-five, as a consequence of adherence to traditions which have had their day; and the Army, in consequence, suffers. Under the proposed alteration, without additional men or horses, some 40 per cent. would rapidly become efficient, and in ten years the Army would be able to earn its pay; and, finally, with decentralisation and adequate numbers of men and horses, we should be fit to justify our existence within a couple of years.

It may be asked, How does all the above affect the War Office? And the answer will depend on the reply each will give to the question.

Does the War Office evolve the Army, or does the Army evolve the War Office?

I believe that a healthy army evolves an efficient administration, and that every army has the war office it deserves, and for the following reasons.

Every human organisation—unless animated by some exceptional sentiment, such, for example, as is evolved in men who directly command fighting men—tends after a lapse of time to settle down into a routine that accomplishes the work demanded of it with least effort to its constituent particles. Thus, if any particular check shows itself in practice to provoke more bother than it is worth, human nature quietly sheds it. If, on the other hand, the absence of that particular check leads to constant correspondence and recrimination, on grounds of self-interest it will be immediately introduced.

Enthusiasm and sentiment have and can have no place in a clerical organisation, but both are compatible in a fighting Service; and in pro-

portion as they are founded on and guided by sound principles, it is in the interest of the clerical organisation to encourage them.

Opposition, therefore, to sound reform will never come from the administration. When the latter appears to obstruct, the real reason will generally be found in the fact that the accumulated experience of the administrators, which must of necessity exceed that of the reformer, shows that the particular branch of the Service affected is not yet ripe for the change advocated. As soon as it is ripe, then, in their own interests, the administrators will adopt it.

That this generalisation is correct anyone may satisfy himself who, with a fair knowledge of our own War Office machinery, will undertake the study of the relations between the Army and the War Ministry in France and Germany respectively.

NAVAL AND MILITARY NOTES.

NAVAL.

HOME.—The following are the principal appointments which have been made: Captains—W. Des. V. Hamilton to "Grafton"; C. Campbell, C.B., to "Thesus." Commanders—E. G. Rason to "Royalist"; F. C. Noel to "Scout."

The second class cruiser "Severn," Captain R. Henderson, C.B., has arrived home from China, and will be paid off on the 12th inst. at Chatham. The third class battle-ship "Sultan" has now completed her trials; since her misadventure in the Comino Channel five years ago, when she went on shore during torpedo practice, and her subsequent immersion at the bottom, and successful floating, she has undergone a thorough refit, and with the exception of her main muzzle-loading armament, which is unfortunately retained, has been brought as far as possible up to date. New decks, cabins, and topsides have been fitted, military masts and fighting-tops have been substituted for her former barque-rig, a complement of Q.F. guns has been added to her original armament, and she has been supplied with a modern set of propelling engines, designed and constructed by Messrs. J. and G. Thomson, of Clydebank, Glasgow. These engines are of the inverted triple-expansion type, with cranks set at 120°. Steam is supplied by eight single-ended boilers, which are placed in two separate water-tight compartments, and are arranged two forward and two aft of a central transverse stoking platform in each compartment. They are of the marine return tube pattern, 15 feet 2¾ inches in mean diameter, and 10 feet long, containing four furnaces each. Siemens-Martin steel is used throughout for their construction, and they are designed for a working pressure of 155 lbs. per square inch. The following are the results of the eight hours' run under natural draught:—Boiler pressure, 147·7 lbs.; vacuum, 25½ inches; revolutions, 88·7; I.H.P.—high pressure, 1,872; intermediate, 2,205; and low pressure, 2,454, giving a total I.H.P. of 6,531. From this it followed that the full power developed was "uniform" in compliance with the conditions of acceptance. No air pressure was used in the stokeholds, and the mean speed of the run, as measured by patent log, was 14·6 knots. The draught was 21 feet 6 inches forward, and 24 feet 9 inches aft, so that, although the double bottom was filled with water to bring her down, yet, in the absence of her armament, the trim of the ship was light. The coal consumption amounted to 2·1 lbs. per H.P. per hour.

The ship completed her "maximum" power trial under forced draught with equally satisfactory results. The conditions of the four hours' steaming were that the engines should be worked to develop 8,000-H.P., with a steam pressure of 150 lbs. and an air pressure in the stokehold not exceeding half-an-inch of water. The actual mean *data* of the run were as follows:—Steam in boilers, 151 lbs.; vacuum, 25·9 inches; revolutions per minute, 93·8; I H.P. 2,277 (high pressure), 2,989 (intermediate pressure), and 2,978 (low pressure), and total power 8,244. These results were obtained with an air pressure of ·36 inch and a coal consumption of 2·4 lbs. per unit of power per hour. The average speed of the ship was 15·3 knots, measured by patent log. The machinery worked smoothly without any vibration from the screw. The final trial was a run of 30 consecutive hours for the determination of her coal consumption at a uniform power of 4,000 horses. This was less by 2,000 than her covenanted I.H.P. with natural draught, and may be regarded as her ordinary condition of steaming at sea. The mean results of the thirty hours' steaming were:—Boiler pressure, 141 lbs.; vacuum, 27½ inches; revolutions, 74·8; and total I.H.P., 4,014. The average speed of the vessel was 13·8 knots, and the coal consumption amounted to 1·79 lbs. per I.H.P. per hour. The results are regarded as very satisfactory.

Last month was launched at Devonport the twin-screw, sheathed sloop "Algerine." Her principal dimensions are:—Length between perpendiculars, 185 feet; breadth, extreme, 32½ feet; draught of water, forward 11 feet, aft 11½ feet; displacement in tons, 1,050; estimated H.P., 1,400; speed with forced draught, 13 knots. Her engines, which are in course of construction at Keyham Factory, will consist of two complete sets of triple-expansion engines, with cylinders of 13½, 20½, and 31 inches diameter in separate engine-rooms, each capable of developing 700-H.P., with 200 revolutions per minute. Provision is made for a total coal stowage of 200 tons. About 450 tons of material have already been built into the "Algerine," and the interior is in a very forward state. Her total cost will be about £66,000, nearly one half of which has still to be spent in labour and materials.

The cruisers "Arrogant" and "Furious," which are being built at Devonport, are now fairly in hand. The armament of these vessels, which has only just been decided upon, will consist of twenty-seven guns, all Q.F., but of six different types, viz., four 6-inch, six 4·7-inch, eight 12-pounder (12 cwt.) guns, one 12-pounder (8 cwt.), three 3-pounder Hotchkiss, and five Maxim machine-guns. The torpedo armament will consist of an 18-inch submerged torpedo tube on each broadside.

From a Parliamentary paper just issued, giving interesting particulars as to the prices to be paid to contractors for ships, machinery, and gun mountings, we find that Messrs. J. and G. Thomson and Messrs. Laird Brothers, who are building the battle-ships "Jupiter" and "Mars" respectively, differ to a trifling extent only in their prices, the hull and machinery of the first-named costing £732,683, of the latter £733,211; while the Elswick firm asked over £130,000 more. The "Powerful" and "Terrible," the first class cruisers building at Barrow and Clydebank, cost about £570,000 each, and Sir W. Armstrong again asked for about £60,000 more. Messrs. Maudslay receive £10,600 for allowing the two ships to be fitted with Belleville boilers. The second class cruisers of the "Talbot" type average about £211,000 each, with a proportionate expense for gunnery fittings. The forty-two destroyers vary in cost from the £33,474 of the "Daring" and "Hornet" to the £39,665 of the "Zebra."

For some time past experiments have been carried on both at Devonport and Portsmouth by the dockyard and torpedo authorities, with an aluminium torpedo-tube. It is understood that at Devonport the tube has been considered unsatisfactory, while on the other hand at Portsmouth, the Vernon officers are so satisfied that they wish to see it tried in one of the torpedo-boat destroyers. Although the door and strips are made of brass, as in the steel tubes, the aluminium article weighs only one-third of the steel one, and as it has to be carried on the deck of torpedo-boats, where every atom of weight tells for or against efficiency, its utility becomes a question of considerable importance. It is alleged against aluminium that it lacks stiffness, and that the vibration of a torpedo-boat may do an injury which was impossible in a vessel like the "Scourge," in which the experiments were carried out, and the Vernon officers are, therefore, very anxious to see how it will answer under the altered conditions.

The new first class cruiser "Terrible" was launched on the 27th May, from the yard of Messrs. J. and G. Thomson, at Clydebank, near Glasgow, and the subjoined description is taken from the *Times*. "The new ship is notable from more than one point of view; in the first place, she far exceeds in size any vessel of her class that has gone before. When the dimensions of the 'Blake' and the 'Blenheim' were announced a few years ago it was considered that a remarkable advance had been made in regard to size, and there were some critics who exclaimed against the extreme dimensions which it was considered had been adopted. These ships are 375 feet long, and 65 feet beam, the mean draught being 25 feet 9 inches, and the displacement 9,000 tons. The 'Terrible' and her sister-ship the 'Powerful,' now under construction at Barrow, are each 500 feet long between perpendiculars, or 538 feet over all, and with a beam of 71 feet, are designed

to have a draught of 27 feet, and are to be 14,200 tons each in displacement. In the machinery department the advance is hardly less marked. On trial the engines of the 'Blenheim,' which alone of the two vessels was tried with forced draught, gave off 21,411-I.H.P.; the 'Powerful' and 'Terrible' are to be driven by engines exerting 25,000-H.P. On the natural draught trials, however, the 'Blake's' propelling machinery gave out 14,525-H.P., with an air pressure equal to a head of 0·4 inch of water, that of the 'Blenheim' 14,924-H.P., with an air pressure equal to 0·2 inch of water only. As it is intended to run the 'Powerful' and 'Terrible' with natural draught only, the powers just quoted should be compared with the 25,000-H.P. hoped to be obtained with the latter vessels. It may be stated here, for the information of those who are not acquainted with Admiralty trial-trip practice, that the term 'natural draught' is not always used in its primitive sense of being the draught due to the chimney alone, but that a slight plenum is generally maintained in the stokehold, anything under about half-an-inch being considered natural draught. On her forced-draught trial the 'Blenheim' had 2 inches air pressure, which is the maximum allowed for large vessels.

"The chief feature of interest in the two new cruisers is not, however, in their size, or even the enormous power that is to be obtained from their engines, but the manner in which the steam is to be generated to supply that power. In fitting water-tube boilers to these important ships the Admiralty authorities have made one of the boldest and most important steps ever taken in the history of naval engineering.

"The 'Terrible' is a first class twin-screw protected cruiser, but, like all her modern sisters, she has no side armour, the protective element being entirely confined to the armoured deck, which extends over the whole length of the ship. In its thickest part it is 4 inches thick, and it tapers to 3 inches at the ends. It is composed of three layers of steel plating, the practice of fitting the deck in layers, instead of solid plates, much facilitating construction and reducing cost, as the price of curved plates rises enormously as their thickness increases. The edges of the deck join the skin of the vessel 7 feet below the load water line, and the deck rises amidships to 3 feet 6 inches above that level, so that in cross section the deck forms a flattened arch 10 feet 6 inches from the springing to the crown. This, we understand, is in excess of anything hitherto planned, and it enables the cylinder tops of the engines to be kept below the deck without the use of armoured coamings. The spandrels at the sides are arranged in the usual manner for excluding water by means of subdivision and stowage of coal or stores, the provision for coal armour being very complete. In regard to hull construction, the universal double-bottomed system has been followed, the virtues of which were so notably made manifest in the grounding of the 'Apollo' and the 'Howe.' The usual flat keel with internal vertical keel is used, together with the ordinary longitudinals. The hull is wood sheathed for coppering, but only a very small part of the metal sheathing at the extreme bottom is now in place, the remainder will be attached when the vessel goes round to the dockyard to be completed by the Government. The rudder is of large area, and is partially balanced. The stem and stern frame are of phosphor-bronze, and there are long bilge keels which are covered with metal sheathing. The ship is extensively sub-divided into water-tight compartments. The armament of the 'Terrible' will consist of two 9·2-inch guns, twelve 6-inch Q.F. guns, sixteen 12-pounder Q.F. guns, twelve 3-pounder Q.F. guns, nine machine-guns, and two light guns. There will also be four torpedo discharges.

"The twin-screws are each three-bladed, the diameter being 19 feet 6 inches. The blades are of manganese bronze and the boss is of gun-metal. Both screws rotate inwards, which is the reverse of the ordinary practice, but recent experiments made by the Admiralty warrant the change.

"The engines are of the vertical three-stage compound type, with four cranks, there being two low-pressure cylinders. The diameters are as follows:—High-pressure cylinder, 45 inches; intermediate, 70 inches; the two low-pressure cylinders being each 76 inches. The stroke is 4 feet. An excellent arrangement of standards has been adopted, the engines possessing the advantage of being very open and accessible, with efficient and ample rubbing surface for the guides. There are four cast-steel standards to each cylinder, two back and two front. The cross head is of considerable length, the guides being at each end, both back and front. In this way the cranks are quite exposed, and the cross girders in the engine-bed for taking main bearings are conveniently placed between the standards. The low-pressure and intermediate-pressure valves are of the ordinary flat type, with an arrangement for relieving the pressure at the back. The high-pressure valve is of the piston type. The link motion and the reversing gear are of the usual description. There are two air-pumps to each set of engines, both worked by side levers, one from the high-pressure cylinder and the other from the forward low-pressure cylinder. The receiver pipes are of steel with gun-metal expansion joints. The thrust-block has eight adjustable collars, with white metal. The shafting is hollow and is of Vickers' steel, being 20 inches diameter. The stern shafts are covered entirely with brass. There are two main condensers of the cylindrical type, having a combined cooling surface of 25,000 square feet. There are also two auxiliary condensers, the combined surface of these being 3,000 square feet. There are four 24-inch centrifugal pumps for the main condensers, and the two 9-inch auxiliary centrifugals, with air-pumps, for the auxiliary condensers. There are three Weir's feed-pumps in each engine-room, or six in all. There are also six pumps of the same type in the stokeholds.

"The ship has no fewer than forty-eight boilers, these being all of the Belleville water-tube type. They are situated in eight compartments, four of which contain eight boilers each, and the four others four boilers each. There are, in addition to the stokehold pumps already mentioned, eight sets of air-compressers. These form an essential feature in the Belleville system of steam generation, as they are used for forcing air, through suitable nozzles placed above the fire-doors, into the interior space of the boiler. The object is to promote combustion, not only by the admission of fresh air, but by securing a thorough mixture of the gases; whilst, at the same time, the flame is spread over the heating surface so as to reach all parts. Baffle plates of sheet steel are also placed amongst the tubes to secure the same end.

"The 'Terrible's' boilers are equally divided in number between the eight element and seven element arrangement. The collective grate surface is 2,200 square feet, and the total heating surface is 67,800 square feet. The tubes are of lap-welded steel, 4½ inches external diameter and about 6 feet 8 inches long. The total length of pipe in an element is 120 feet. The boxes into which they are screwed are of cast iron, carefully annealed, or what is generally known as 'malleable cast.' The thickness is $\frac{5}{16}$ inch. A great deal of care has been taken to make sure that these malleable castings are trustworthy, though the long-continued use of them abroad should give confidence in their adoption. A test piece is cast on each part, and any one box is liable to be tested. The tubes are screwed into the boxes by threads of differential pitch, jam nuts being provided as additional security. The boiler casings are of sheet steel with 3 inches of asbestos between. The boiler pressure will be 260 lbs. to the square inch, but this will be brought down to 210 lbs. by means of reducing valves.

"The steam piping is of steel with gun-metal expansion glands. There is a centre line longitudinal bulkhead running right through the machinery space, and on each side of this there are three lines of steel piping between the boilers and engines, or six lines in all. The arrangement is such that the boilers on either side can be made to serve either set of engines at will. The steam separator, the lime tanks, the automatic feed regulators, and other parts essential to the Belleville system are, naturally, all to be fitted.

"There will be four funnels having a total height of 80 feet above the grate bars, and with these it is hoped to get the 25,000-H.P. without forced draught.

"It would be interesting to compare these two new cruisers the 'Powerful' and 'Terrible,' with the United States cruisers, 'Columbia' and 'Minneapolis,' the triple-screw vessels which attained such remarkable speed on their trials; but this may be better done when we have seen what our own ships can do. In the meantime, it is to be hoped that the Admiralty authorities will adopt some more trustworthy means of ascertaining the speed than by the ordinary log, the records of which are notoriously fallacious."

FRANCE.—The following are the principal promotions and appointments which have been made: Capitaine de Vaisseau—Bienaimé to Rear-Admiral; Capitaine de Frégate—Merleaux Ponty to Capitaine de Vaisseau. Rear-Admirals—Fournier to Naval Command in Algeria; Pongin de la Maisonneuve to Command of Atlantic Naval Division; Bienaimé to Command of East Indian Division. Capitaines de Vaisseaux—Fiéron to "Couronne"; de Rocher to "Dubourdieu," as Chief of the Staff to Rear-Admiral Pongin de la Maisonneuve; Ravel to Chasseloup-Laubat"; de Fauque de Jonquières to "Hoche." Capitaines de Frégates—Surcouf to "Primauguet," as Chief of the Staff to Rear-Admiral Bienaimé; Drouillard to "Jean Bart."—*Le Moniteur de la Flotte.*

Rear-Admiral Bienaimé is already in command of the East-Indian Naval Division, having for the last twelve months previous to his promotion been senior officer in charge with his broad-pennant flying in the "Primauguet." The coast-defence battle-ship "Valmy" is continuing her trials: with the engines indicating 2,102-H.P. out of a possible 8,400, the speed realised was 10·7 knots; the consumption of coal per square metre of grate per hour, 60 kilogrammes and consumption of coal per H.P. per hour, 0·856 kilogramme; during a further eight hours' run with all boilers alight and the engines developing 7,715-I.H.P., the ship maintained a mean speed of 15·5 knots, with a consumption of coal per square metre of grate of 114 kilogrammes, and a coal consumption per H.P. per hour of 0·872 kilogramme.

The new third class cruiser "Linois" on trial at Toulon during an eight hours' run, with the engines developing 3,400-I.H.P. out of a possible 6,600, averaged 15·6 knots with 128 revolutions of the screws, with a coal consumption of 745 grammes per H.P. per hour.

The new torpilleurs-de-haute-mer "Ariel" and "Filibustier," built by M. Normand, of Havre, have made a successful trial at high-speed at Cherbourg, 360 revolutions of the screw in the first-named giving a mean of 25·7 knots, and 359 revolutions giving the latter a mean of 25·5 knots. Although it was announced some weeks ago that the "Lansquenet" was at last really *en route* for the Mediterranean, that unfortunate high-speed torpilleur has not yet managed to get away, fresh defects having appeared in her machinery, and the Minister of Marine has directed that she shall be returned to the builders for repairs; it is now nearly two years since she was launched.

Three first class torpedo-boats, 185, 190, and 191, have been transferred from Cherbourg to Toulon. The first two have a speed of 25 knots; the last has lately averaged 25·5 knots on her trial trip. For the future all vessels of the "Condor" and "D'Iberville" types, which up to now have been designated "croiseurs-torpilleurs" and "avisos-torpilleurs," will be styled under one class as "contre-torpilleurs d'escadre."

The second class battery-cruiser 'Dubourdieu" is to relieve the "Duquesne" as flag-ship of the Atlantic Division. Although the "Duquesne" was commissioned only two years ago, after an extensive refit, her engines and boilers are in so bad a state that it has been found necessary to pay her off.

During the late cruise of the active division of the Mediterranean Fleet off the Algerian coast, the squadron visited Biserta, and the second class cruiser "Suchet" with the "Wattignies" and "Léger" anchored in the grand inner harbour formed by the lake. No difficulty was experienced or any assistance required by the three ships in passing through the new canal, which connects the lake with the outer harbour. The squadron experienced a rough sea, in consequence of the strong mistral blowing, during the passage back to Toulon, and it is reported that the "Formidable" and "Amiral-Baudin" made very bad weather of it, both ships taking in so much water that the steam pumps had to be used.

The Reserve Squadron of the Mediterranean Fleet has again been unfortunate. Last month the "Amiral-Duperré" went ashore in the Gulf d'Juan; now it is reported that the third class cruiser "Milan" grounded while entering the roadstead of Hyères. The vessel was ashore some eighteen hours before she was floated, but luckily does not seem to have sustained any serious damage.

Rear-Admiral Fournier, lately in command of the Atlantic Naval Division, has been examined by the Parliamentary Commission of Enquiry into the state of the Navy, and gives it as his opinion that the fleet at present is in an inefficient condition, and before it can be placed on a satisfactory footing many important reforms will have to be made. He points out that nearly all the cruisers on foreign stations are built of wood, and not fit for service in war, and they do not even efficiently serve as schools of instruction for officers and men, which they are supposed to do. With regard to the battle-ships, the Admiral is of opinion that they lack speed, and their coal supply is so lamentably small, that there is not one which could steam full speed from Toulon to Alexandria and back; the type of vessel he favours is an armoured cruiser, protected by light vertical armour and an armoured deck, of high speed and with a coal supply, which will ensure her a large cruising radius; such a ship, he considers, the Navy possesses in the "Dupuy-de-Lôme" (frontispiece); he thinks the present arrangement for coast-defence between the Ministry of Marine and of War answers well, but that the *personnel* available for this service is neither sufficiently trained nor strong enough for the work it would have to perform in war time.

It may be mentioned that the whole of the hull of the "Dupuy-de-Lôme," from 3 feet below the water-line upwards, is protected by 4-inch steel armour; she is 374 feet long, has a beam of 51 feet, and with a mean draught of 23 feet 6 inches a displacement of 6,297 tons. Her armament consists of two 19-centimetre (7·6-inch) guns, mounted one forward and one aft in barbette turrets of 4-inch steel; six 6-inch Q.F. guns, two firing forward and two aft, also protected by 4-inch armour, and twenty small Q.F. and machine-guns, with four torpedo-tubes. Her engines develop 14,000-I.H.P., giving her an extreme speed of 19·8 knots, and her coal stowage is 900 tons, which may be taken as giving her a radius of action of 4,000 miles at 10 knots speed, but hardly more when all the exigencies of modern war are taken into account.

The Minister of Marine has approved, with some modifications, of the plans for the construction of a third slip, 406 feet long, on the right bank of the Charente, in the dockyark at Rochefort.

The Minister of Marine has decided that the schools for apprentices at the five Naval Arsenals and the establishment at Indret shall be suppressed from the 1st October next.

The naval manœuvres in the Mediterranean commenced on the 1st instant, and will last until the 27th. The first period consisted, as usual, of tactical evolutionary exercises, which were carried out by the Active and Reserve Squadrons independently, and which concluded on the evening of the 6th, when both fleets anchored in the Bay of Salins d'Hyères, and were then reconstituted into three divisions in readiness for the Grand Manœuvres as follows:—

Division A, under the command of Rear-Admiral de Maigret:
Battle-ships—"Dévastation" (flag), "Courbet."
Coast-defence battle-ships—"Terrible," "Caïman."
First class cruisers—"Tage," "Sfax."
Contre-torpilleurs—"Wattignies," "Lévrier," "Flèche."
Torpilleurs-de-haute-mer—"Sarrasin," "Argonaute," "Éclair."
Division B, under the command of Rear-Admiral MacGuckin de Slane:
Battle-ships—"Magenta" (flag), "Neptune," "Redoutable."
Second class cruiser—"Davout."
Third class cruiser—"Troude."
Contre-torpilleurs—"Faucon," "Léger."
Divlsion C, under the command of Rear-Admiral Turquet de Beauregard:
Battle-ships—"Amiral-Duperré" (flag), "Marceau," "Amiral-Baudin," "Indomptable."
First class cruiser—"Cécille."
Second class cruiser—"Suchet."
Third class cruisers—"Milan," "Forbin."

It will thus be seen that "C" is stronger than either "A" or "B," but not so strong as "A" and "B" together.

The manœuvres proper will take place between the 14th and 28th, and will comprise two distinct series of operations. First Phase: Squadron "C" will attempt to prevent the junction of "A" and "B," the two divisions of the enemy's fleet, and to destroy them in detail; if "A" and "B" succeed in effecting a junction, they will attack "C," which will be forced to take refuge in one of its ports, Ajaccio for instance. Second Phase: "C" will be blockaded in Ajaccio by "A" and "B," and will endeavour to force the blockade, and reach Toulon. The "Défenses Mobiles" will defend certain points of the coast, and the "Défense Mobile" of Corsica will assist "C" during the second phase of the operations.

The "Formidable," flag-ship of Vice-Admiral de la Jaille, Commander-in-Chief of the Active Squadron, and "Richelieu," flag-ship of Vice-Admiral Gervais, commanding the Reserve Squadron, will be neutral, the two Admirals acting as umpires.

The torpedo-cruiser "Vautour," belonging to the Reserve Squadron, has been temporarily placed at the disposal of Vice-Admiral de la Jaille.

From the 7th to the 12th the combined fleet were to be exercised at tactical evolutions and other operations under the supreme command of Vice-Admiral de la Jaille, and on the 12th the ships would proceed to the following anchorages in readiness for the Grand Manœuvres:—"A" to Toulon, "B" to Algiers, and "C" to Ajaccio. In the Channel the Squadron of the North were to spend a fortnight in tactical evolutions, and the manœuvres proper would occupy the two following weeks, for which purpose the fleet was reconstituted into two new divisions—"A" and "B." "A," blockaded in Brest by "B," is to attempt to force the blockade and then bombard in succession Cherbourg and Rochefort; the speed of "A" is to be considerably superior to that of "B," and the squadron is to refill with coal between each attack either at Brest or Quiberon. The "Défenses Mobiles" of the four "Arrondissements Maritimes" will take part in the operations, attacking the hostile squadron in each case as opportunity offers. Vice-Admiral Alquier, commanding the Northern Division, will be umpire-in-chief.

The Reservists, called out for their four weeks' training, were distributed at Toulon between the ships of the Reserve Squadron, and in the Channel ports between the torpedo-boats and the ships of the squadron.—*Le Temps, Moniteur de la Flotte,* and *Le Yacht.*

GERMANY.—The ceremony of opening the new Baltic and North Sea Canal, with the accompanying festivities, passed off very successfully, and on the whole was favoured with fine weather.

The Kaiser arrived at Hamburg on the afternoon of the 19th ult., proceeding on board the Imperial yacht "Hohenzollern," and at 3.30 the

next morning the procession started through the canal, the Imperial yacht leading; she was followed by the "Kaiser Adler" (the old "Hohenzollern"), on board of which were the King of Saxony, the Grand-Duke of Baden, the Prince Regent of Bavaria, the King of Würtemberg, and the Grand-Duke Alexis of Russia, with their staffs; then came in the following order: the Hamburg and Australian liner "Kaiser Wilhelm II.," with Prince Henry of Prussia, the Grand-Duke of Hesse, the Duke of Saxe-Coburg Gotha, and other German Princes; the "Lensahn," the yacht of the Grand-Duke of Oldenburg, with the Hereditary Prince; the "Osborne," with the Duke of York; the Italian Royal yacht "Savoia," flying the flag of Admiral the Duke of Genoa; the Austrian torpedo-aviso "Trabant," flying the flag of Rear-Admiral the Arch-Duke Stephen, commanding the Austrian Squadron; the four Hamburg-American liners "Augusta Victoria," "Trave," "Ruggia," and "Columbia," on board of which were the Members of the Reichstag, Landtag, and the High Civil and Military Authorities of the Empire; the German despatch-vessel "Grille," flying the flag of Admiral Knorr, the Commanding Admiral of the German Navy; the "Enchantress," flying the flag of Lord W. Kerr; the Italian torpedo-cruiser "Aretusa," with flag of Vice-Admiral Accinni; the French third class cruiser "Surcouf," with flag of Rear-Admiral Ménard; the Russian armoured gun-boat "Groziastchy," with flag of Rear-Admiral Skrydloff; the Spanish third class cruiser "Marques de la Ensenada," with flag of Rear-Admiral de Espinosa; the Swedish gun-boat "Edda," with flag of Rear-Admiral von Klinteberg; the Norwegian gun-boat "Viking"; the United States third class cruiser "Marblehead," with flag of Rear-Admiral Kirkland; the Roumanian despatch-vessel "Mircea"; the Danish third class cruiser "Hekla," with the broad pennant of Commodore Gad; and the Netherlands cruiser "Alkmaar." The "Hohenzollern" arrived at the Holtenau end of the canal at one p.m., and on emerging from the canal was saluted by the whole of the combined fleets in Kiel Harbour with thirty-three guns; it was late in the evening before all the vessels had completed the passage and taken up their anchorages.

On the 21st the ceremony of laying the final stone by their Imperial Majesties was performed about noon with all the pomp and ceremony befitting the occasion; the address of the Kaiser, which was afterwards placed in the keystone, which will form the pedestal of a statue to the Kaiser William I., was as follows:—"This work, which bears eloquent testimony to German energy and industry, has risen into being accompanied by the sanguine sympathy of all portions of the Empire and visibly protected by Heaven, by whose favour the Fatherland has been spared every disturbance of peace during the period of building. It is a cause of great satisfaction to us to see the hopes brought nearer to fulfilment which the Empire has placed on the construction of a waterway between the North Sea and the Baltic, calculated to serve the purposes both of the Navy and the Mercantile Fleet. But it is further particularly pleasurable to be able to open this waterway to traffic, surrounded by our noble allies and in the presence of the representatives of the people and of the deputies of friendly Powers, whose squadrons we heartily welcome in our harbour. As we consider it the noblest traditional duty of our Imperial office by the maintenance of peace to guard the acquisitions and secure the future development of German labour in the departments of national prosperity, freedom, and civilisation, so are we determined to procure free paths for the work of the Fatherland in the hot fight of competition, and to protect it from the dangers which are inseparable from its profession. But the canal is not only intended to aid the Fatherland, its trade, navigation, and defensive power, inasmuch as we place it at the service of the world's commerce, throwing open ungrudgingly to all seafaring peoples a share in the advantages which its use procures. May it be a work of peace, and may it, through all time, serve only the rivalry of nations for the benefits of peace! At the same time we wish a memorial of the opening of the new channel of intercourse to be erected, and we desire, by this memorial, to

redeem a portion of the thanks which the German people owes to the great Emperor, who twenty-five years ago, united the German races in an eternal bond and with wise foresight began the work now completed. May the rich blessing which attended the rule of the Emperor of undying memory rest also upon this work!"

In the afternoon the Kaiser reviewed the combined fleets, steaming up and down the lines in the "Hohenzollern," afterwards paying a long visit to the "Royal Sovereign," during which the Union Jack at the main (the flag of an Admiral of the Fleet) was hoisted alongside the Imperial Standard. In the evening the Kaiser gave a grand banquet in a large hall constructed in the form of a full-rigged sailing vessel of the 17th century, the stem being adorned by a colossal figure of Germania, wearing a winged helmet.

On the morning of the 22nd the Kaiser hoisted his flag on board the "Kurfürst Friedrich Wilhelm," the flag-ship of the Manœuvre Squadron, and with the two divisions of the fleet proceeded to sea, where during the forenoon some tactical evolutions were carried out, the fleet returning to harbour at mid-day; the despatch-vessel "Jagd" was placed at the disposal of the English senior officers for the purpose of witnessing the review. In the afternoon the Kaiser again visited different ships of foreign countries, but the festivities were now practically over, and the fleets began to disperse. The English Squadron remained until the morning of the 25th, leaving then for Copenhagen, as the Kaiser had honoured the English Admiral by accepting an invitation to dine on board the "Royal Sovereign" on the previous evening.

The first division of the Manœuvre Squadron, consisting of the "Kurfürst Friedrich Wilhelm," "Wörth," "Brandenburg," and "Weissenburg," under the command of Vice-Admiral Koester, has been cruising with the second division for tactical evolutions and target practice in the North Sea, but has now proceeded on a cruise to the coast of Spain; while the second division, under Rear-Admiral Barandon, will continue to exercise in the Baltic for the remainder of the month, and on the 1st August, according to present arrangements, both divisions will rendezvous at Wilhelmshaven in readiness for the Grand Manœuvres. The fourth class battle-ship "Hagen" and the second class cruiser "Kaiserin Augusta" have been ordered to Tangier, and the "Hildebrand" is likely to follow. The training-ship "Stosch" has also proceeded to the Maroccan Coast.—*Neue Preussische Kreuz Zeitung.*

The new sea fort, which has been constructed on Newwerk Island at the mouth of the Elbe, has now been armed with heavy Krupp guns. These guns have a calibre of 42 centimetres (16·5 inches); are jacketed, and have the Krupp breech-closing arrangements with a round wedge. They are 14 metres (45 feet 9 inches) long; and have 120 grooves in the rifling. The projectiles weigh 1,000 kilogrammes, and the powder charge 410 kilogrammes. The initial velocity of projectile is 604 metres, which, with an elevation of 10° 30′, gives a range of 8,850 metres. The steel shells will penetrate at 1,000 metres an armour plate 1 metre thick.

The other coasts forts at the mouth of the Elbe are armed with 14-centimetre (5·4-inch) coast guns of the latest model, mounted on central-pivot coast carriages, which permit of an elevation of 44° and of 4° depression. With a projectile weighing 245 kilogrammes, and a charge of 115 kilogrammes, the velocity is 640 metres, which, firing at an elevation of 44°, gives a range of 20,000 metres; the trajectory in this case has a height of flight of 8,540 metres, while the time of flight is 70″·2. This is the extreme range which has been as yet attained by any gun with a projectile of similar weight.—*Tägliche Rundschau.*

RUSSIA.—Want of space has prevented us noticing the launch of the new Imperial yacht "Standard," which took place on the 10th March, from the yard of MM. Burmeister and Wain, at Copenhagen, in the presence of the King of Denmark, the Russian Ambassador, and other high dignitaries. The new

yacht is a graceful vessel, of the old type of hull, with beautiful lines, and is the largest yacht yet built, having nearly 1,200 tons more displacement than the "Hohenzollern," the yacht of the German Emperor. Her dimensions are as follows: — Length between perpendiculars, 367 feet; beam, 49 feet; displacement, 5,557 tons; with a mean draught of 19 feet 6 inches. Her engines are to develop 10,600-I.H.P., giving a speed of 20 knots, the boilers are the Belleville water-tube type, which have been tried successfully on board several Russian ships. On the 1st June the Tsar accompanied by the Empress visited the new Admiralty yard to lay the silver plate, which is enclosed in the keels of new ships, of a new coast-defence battle-ship, the "General-Admiral Apraksin," and also of a new gun-boat, the "Khrabry"; they then proceeded in a steam cutter to the Galerny Island to witness the launch of another battle-ship called the "Sebastopol," a sister-ship to the "Poltava" and the "Petropavlofsk," which were launched last year, and afterwards crossing the river to the Baltic Works they repeated the ceremony of enclosing the silver plates in the respective keels of the new cruiser of the "Rurik" type, to be called the "Rossia," and a corvette, to be named the "Vierny," for training naval cadets. The following will be the dimensions of the four new vessels:—The "Rossia," triple screws, length, 468 feet; beam, 68 feet; mean draught, 26 feet; displacement, 12,200 tons; engines, 17,000-I.H.P.; the "Apraksin," length, 277 feet; beam, 52 feet; draught, 17 feet; displacement, 4,126 tons; engines, 5,000-I.H.P.; the "Khrabry," length, 229 feet; beam, 41 feet; displacement, 1,492 tons; engines, 2,000-I.H.P.; and the "Vierny," length, 203 feet; beam, 36 feet; displacement, 1,280 tons; auxiliary steam, 400-I.H.P.

Including the "Sebastopol," there are at present five uncompleted ironclads anchored in the Neva, two of which were launched in 1893, and three or four of them are receiving their engines from the three English firms, Messrs. Hawthorn, Leslie and Co., Maudslay, Sons and Field, and Humphrys, Tennant and Co.

The Thames Ironworks Company have well advanced towards completion in their shipyard, for the Russian Government, an armed steam transport built entirely of steel, and double-bottomed, of the following dimensions:—Length between perpendiculars, 170 feet; extreme breadth, 33 feet; depth from top of keel, 16 feet 7 inches; and a load draught of 12 feet, at which her displacement will be 1,055 tons. The vessel will be fitted by her builders with triple-expansion screw engines of 1,050-I.H.P., with which she is expected to attain a running speed of 12 knots. Her armament is to consist of two 47-millimetre and two 37-millimetre Q.F. guns. The work on this transport is being pushed forward with all possible despatch, three months only from the date of order being allowed for its entire completion. There is also being constructed by Messrs. Yarrow and Company, of Poplar, a steel torpedo-boat destroyer, 190 feet in length, about 240 tons displacement, and 7 feet draught of water. She will be fitted with twin-screw triple-expansion engines to indicate about 4,500-H.P., steam for which is to be supplied by eight Yarrow water-tube boilers. The guaranteed speed is to be 29 knots. The armament of the vessel will consist of one 75-millimetre gun on the conning tower forward, two 47-millimetre guns forward for direct ahead fire, and one 47-millimetre gun aft. There will also be fitted two torpedo-tubes on deck for discharging over either side at an angle.

The Volunteer Fleet Committee has ordered from a French firm two of the three new cruisers for which the Government has granted nearly 4,000,000 roubles. The third vessel will be ordered from an English shipbuilding yard. They are to be of the same type as the "Pamiat Merkuriya," but with a speed of not less than 20 knots. They will each be armed with six 6-inch Q.F. guns, and eight 47-millimetre Hotchkiss Q.F. guns. Three torpedo-boats for the Black Sea Fleet have also been ordered from a foreign firm.

UNITED STATES.—The Bureau of Construction and Repair have begun the preparation of plans for the new battle-ships, as authorised by Secretary Herbert, and recommended by the Board of Bureau Chiefs. After long consideration and consultation with the Heads of Departments, the Secretary directed that the Bureau of Construction and Repair make plans with the following features:—

Battery—Four 13-inch guns; four 8-inch guns, and fourteen 5-inch guns.

Turrets—The 8-inch turrets to be superimposed upon the 13-inch turrets; only two to be built, the one forward and the other aft.

Draught—Extreme, 25 feet.

Speed—16 knots under 1-inch air pressure.

Coal Supply—Normal, 500 tons.

Armour—To be 15 inches in thickness, and more generally distributed over the ships than in plans heretofore followed. The belt to be 8 feet deep, and extending a foot more out of water than in the plans pursued in the case of the battle-ships of the "Indiana" class. The "Indiana's" belt is 7½ feet deep, and is too low in water to satisfy the ordnance experts.

There is a possibility that some changes may be made in the plans on account of weights. If it is found that to include these features the displacement will be greater than that authorised by Congress—10,000 tons—some changes will, therefore, have to be made. The following are the salient points of a supplemental memorandum filed with Secretary Herbert by Chief Naval Constructor Hichborn, opposing the recommendation of the Chief of the Bureau of Ordnance for the 13-inch guns for the new battle-ships, and advocating that 12-inch guns be adopted:—

"The claim of much greater energy and consequent increased destructive force for the projectile from the 13-inch gun is by no means disputed, and the suggestions of the Bureau of Ordnance would meet with ready acceptance if the issue could be narrowed to one involving simply the relative offensive powers of the two guns; but the whole question of weights assignable to armour, armaments, etc., is one of compromise, and in arriving at conclusions it is necessary to study closely the designs of ships being built for foreign service, since, as possible opponents, their armament should have great influence in determining the thickness of armour and calibre of guns for our own ships.

"The abnormal development of large calibre naval guns that culminated in the 100-ton guns of the Italian battle-ships, gave rise to a very general clamour in both the English and French Navies for similar guns for the battle-ships then building in their respective Navies. This injudicious popular demand led to the building of twelve 110-ton guns for the English Service, and a few 75-ton guns for the French Navy, but this radical step was not taken without strong protest from the conservative artillerists of prominence. The result more than justified their protests. The English, French and Italians have learned by costly experience that such heavy calibres are impracticable for use on board ships for many reasons, the principal ones being great weight, difficulty of handling, and short life.

"The re-action soon set in, however, and from the 100-ton guns of their earlier ships the Italians went to the 68-ton gun for the 'Sardegna' and 'Re Umberto,' and for their latest battle-ships of about 10,000 tons displacement, have adopted 10-inch guns for the principal battery, and have even gone so far as to order the removal of 100-ton guns from one of the earlier ships and the substitution of 10-inch guns in their place. English experience has been almost identical with that of the Italians.

"Although the French Admiralty followed somewhat the lead of the Italians and installed a few heavy guns, they quickly abandoned the idea, and for ships designed during the past ten years the heaviest gun provided has been the 12-inch gun, which is the calibre intended for the main batteries of all first class battle-ships now building and proposed.

"The Russian and German Admiralties have been more conservative than the other first class European Powers, and they have at no time adopted for naval purposes a larger calibre than 12 inches, which is about the calibre intended for their most recently-designed battle-ships of 10,000 tons and upward.

"The armament proposed for the new battle-ships for the U.S. Navy is in every way superior to that of any foreign ship now building—the battery of eight 8-inch guns in four turrets being without a counterpart in any foreign design.

"In briefly outlining the development and gradual abandonment of the larger calibre guns in foreign services, no attempt has been made to go into the causes in detail that led to the present general adoption of 12 inches as the largest calibre, since these causes cover not only questions of gun powers and manufacture, but the larger issue of the best possible distribution of weights among the various elements of armour, armament, engine power, coal endurance, etc., so that the resulting design shall produce the best possible fighting machine under all the varying conditions of actual battle."

Captain Sampson, Chief of the Navy Bureau of Ordnance, having recommended that the armour belts on the new battle-ships should be raised 1 foot higher than in designs heretofore followed, the Chief Naval Constructor has forwarded to the Secretary of the Navy a second memorandum, in which he points out his objections to the proposal:—"The thick belt armour, as proposed, is 15 inches thick at the top and tapers to 8 inches at the bottom. So, at the water-line, as designed, the armour would be 12·2 inches thick. If raised a foot it would be 11·3 inches thick, only, which is not enough.

"It is said by ordnance experts that the belt as planned is but 3 feet above and 4 feet 6 inches below the water, with only 500 tons of coal on board, and when a supply of 1,300 tons in the ship the belt is but 18 inches above water and 6 foot under water. If the supply of coal is increased to 1,600 tons, as it is stated may be done, the belt will be less than 1 foot out of water.

"It is notorious that the draught of a ship, especially a large one, exceeds the estimated draught. The improvements added, fittings, etc., which come into vogue, even while a ship is building, are sure to tend to such a result. When a ship is in action and fighting, one side of the ship has an inclination to the fighting side, which further submerges the armour on that side, which is also the side attacked.

"While the protection to be furnished by the belt is for an average craft, it should not be overlooked that when a ship goes into action with her belt armour almost submerged, she loses the protection which it ought to furnish, and there is no remedy for the difficulty; whereas, if she is forced to fight with more of her belt armour exposed than the commanding officer deems prudent, he has the effective remedy of admitting water to the double bottom.

"If these vessels were put to sea in time of war it would be with every pound of coal they could carry, and if the supply became reduced to 500 tons prudence would require them to renew their supply. For all these reasons it is believed that it would be wasteful of protection to place the armour belt so low."—*Army and Navy Journal.*

The extraordinary ballistic resistance of Carnegie Harveyised armour has been further demonstrated by a test which took place on the 1st May at the Indian Head Proving Ground. The plate was successively attacked by two 12-inch Holtzer shells and a 13-inch Carpenter projectile with very flattering results for itself. The plate represented the second group of 18-inch armour for the belt of the battle-ship "Oregon," weighing 306 tons, and was 16 feet 9½ inches long and 7 feet $5\frac{13}{16}$ inches wide, tapering from a thickness of 18 inches at the top, which extended 4 feet down, to 8 inches at the bottom. It weighed 79,300 lbs., and was fitted to an oak backing 36 inches in thickness at the foot of the plate, and 26 inches at the top, being held in place by sixteen $3\frac{8}{10}$-inch and ten $3\frac{2}{10}$-inch armour bolts.

First round—12-inch gun was used; Holtzer projectile, weighing 850 lbs. and charge of brown powder, 294·8 lbs.; velocity, 1,465 feet per second; energy, 12,662 foot tons. The projectile struck the plate 78 inches from the left end of the plate, 38 inches from the top, and about 7 inches below the bevel. It penetrated approximately 6 inches, and then broke up into comparatively small fragments, the head remaining welded in. There were no cracks. A bulge was produced about the impact half-an-inch high, extending in an annular circle around the impact, its width being about 3 inches. As this was the cracking shot for acceptance, and no cracks were produced, Captain Sampson ordered that the final or penetration shot for acceptance be fired.

Second round—12-inch gun; Holtzer projectile weighing 850 lbs.; charge, 443·4 lbs. brown powder; velocity, 1,926 feet per second; energy, 21,885 foot tons. The projectile struck the plate 42 inches to the right of the first impact, and a little closer to the bevel. A crack formed on the right side of the impact, extending from top to bottom of the plate, and was from ¼ to 1 inch in width. Around the impact an annular crater 3 inches deep and 6 inches in diameter was formed. The head of the projectile was mashed, resembling a clod of mud thrown against a brick wall. The sudden conversion of the energy of 22,000 foot tons of the shot into heat had produced a temperature sufficient to melt and weld together the two metals. The metal of the plate for a depth of 3 inches and for 6 inches around the point where the projectile struck had been fused and bubbled up like a volcanic crater. It however remained in the hole, the body and base falling outside. The estimated penetration was 10 inches. No damage was done to the armour bolts or backing. Upon this showing the plate was accepted. A 13-inch projectile was then fired at the plate.

Round three—13-inch gun; Carpenter projectile weighing 1,100 lbs.; charge, 489·2 lbs. brown powder, specially intended for guns of this calibre; velocity, 1,810 feet per second; energy, 24,981 foot tons. Projectile struck the plate 32 inches to the left of the first impact. It penetrated only 10 inches, and broke up, the head remaining welded in the plate and the body and base rebounding. Although a crack developed from 3 to 4 inches in width at the top of the plate and 2 inches in width at the bottom, the plate still held together, the crack not being apparently continuous. All the backing and structure behind the plate was crushed. The ability of the plate to keep out other projectiles was shown by the fact that only one armour bolt in the backing was destroyed. Everybody is praising the toughness of the metal, and seems to believe that the armour so far is the conqueror, instead of the conquered, as has heretofore believed to have been the case.—*Army and Navy Journal.*

MILITARY.

CAVALRY INSPECTIONS.

As the period of the cavalry drills is now approaching, the following *résumé* from the pen of General von Pelet-Narbonne, one of the leading cavalry experts of Germany, on the conditions which a well-trained squadron should fulfil, and the means whereby this standard is attainable, may be of use to those officers and others who wish to form an independent opinion on the degree of efficiency which has been reached by our cavalry—an opinion on which they can individually rely, since it will depend on principles which must commend themselves theoretically to all, because they are obviously based on sound common sense, and practically because they have been evolved by experience extending over a term of a great many years.

To the principles laid down by General von Schmidt, and which, thanks to the efforts of Colonel Bowdler, late 8th Hussars, are now accessible to English readers, General von Pelet-Narbonne adds the following:—

"In the drill inspection of closed squadrons the first point to grasp is, that the foundation of all cohesion and precision of manœuvre lies in the capacity of the squadron to ride straight to the front."

"This riding 'straight to the front' can only be attained when every rider has his horse well between his hands and legs, understands 'pace,' and, without turning his head to either flank, follows his troop leader at the prescribed distance, looking straight to his front. The degree of accuracy, therefore, attained in a simple advance is in itself a test of the value of the instruction imparted in individual horsemanship. But the required accuracy cannot be obtained unless before moving off every horse stands absolutely square in the ranks, poised in hand, ready to move at the last sound of the word, hence the importance which attaches to accurate dressing when halted."

It may be noticed in passing that, simple as the above may appear, it is, nevertheless the case that each and all of these conditions are those most generally ignored in our own Service; they are all so obviously matters of common knowledge that in the end everyone forgets to look after them; but how great an importance even such a leader as Seidlitz attached to them, especially to the latter, is evident from his custom of always forming line to the halt with his heavy cavalry before advancing to the attack. Roszbach and Zorndorf are cases in point.

"This riding 'straight to the front' must be judged either from front or rear, never from a flank. It is a good plan when the squadron has proceeded a few hundred yards to sound fours about, and note whether it returns to its original starting point; but this should be done unexpectedly, otherwise the troop leaders will soon find out some dodge of throwing dust in the inspecting officer's eyes.

"The correct maintenance of the prescribed distance between the ranks is of the greatest importance; this must be judged from the flank.

"Particular attention should be devoted to the endurance of the horses at the gallop. Five minutes at this pace is the least, even in heavy ground, to be followed by a charge well ridden home, after which the squadron disperses, rallies and halts, whilst the inspector goes round the horses, noting heaving flanks, displaced kits, or any other signs of neglect or distress. During the gallop the riders must sit still and the horses move in long, steady strides, without crowding, pulling, or changing, all of which indicate waste of energy. The squadron should be manœuvred throughout the duration of the gallop, and, if possible, taken over reasonable obstacles.

"The charge should be delivered absolutely *en muraille*, with no thought of a possible *mêlée* to follow. The enemy must be made to feel your determination to ride him down, not merely to mingle with him. The ranks must be kept clear and distinct, the troop leaders well to the front, and the pace regulated to the best speed of the slowest horse, which implies that up to the last the horses are still in hand."

It may be asked whether, after all, this is not merely a counsel of perfection, whether, in fact, any cavalry in the world approaches this standard? The answer will be found in the following lines, written in August, 1889, immediately after returning from the German parade ground, on which the inspection took place, with the facts still fresh and vivid in my memory.

"The first thing that struck me on riding down to the ground was the extraordinary precision with which the alignment was taken up—every horse dead square to the front; and when the line was called to attention, every man took up his reins, collected his horse, and sat ready to obey the word of command. This is an important feature, for it is on this that the extraordinary precision with which a manœuvre is commenced depends. Again and again, on subsequent occasions, I saw a whole brigade move off at a trot simultaneously—literally, before the eye could sweep from end to end of the formation. Of the march-past at a walk with which the proceedings began, I need only notice that it was neither better

nor worse than what we usually see; but the small horses looked altogether overweighted by their riders, and the want of smartness in the turn-out also unfavourably impressed me. But all this was changed when they began to move. After the march-past the regiment was drawn up in line of squadron column at close interval. The 'trot' was sounded, and they moved off with absolute precision, and, after advancing a couple of hundred yards, opened out by inclining to full intervals. Then they wheeled into half-column of squadrons, and continued the advance in perfect order for about 400 yards, still trotting. Then followed 'front form' and line to the front on the leading squadron, to effect which the rearmost squadron had a considerable gallop. A few more yards to the front to steady them down, and then they broke into column of divisions (*Züge*) to the left, and immediately afterwards the 'gallop' sounded, and away they went at their full gallop of manœuvre of fifteen miles an hour without the slightest opening out; this pace was maintained for about 1,200 yards, then the head of the column wheeled to the right, and as soon as the tail of the column passed the wheeling-point, the 'wheel into line' sounded, and the movement was executed with an accuracy I could hardly believe possible. The advance was continued some 300 yards, and then the 'charge' sounded, and it was delivered almost like a wall; then *mêlée* and rally followed, and the regiment drew up in its original formation of line of squadron columns at close interval. I subsequently measured up the distance covered at the gallop on a large scale-map, and could not make it less than 3,000 yards, take it any way I would. The next operation was the debouching from a wood and charging infantry. The regiments, which, I should have mentioned, numbered five squadrons of sixty-two to sixty-five files, trotted off down one of the numerous cuts through the forest which borders the drill-ground, and when all had well disappeared, we heard the 'halt' and 'threes about'—the Germans still work by threes and not by fours—and the next moment the 'gallop' sounded. The regiment came out, not at the gallop but at the charge; each squadron front formed as it got room, and selecting its own object about 600 yards from the wood, charged down on it at the fullest extended speed of their horses; and then all idea of the little horses being overweighted vanished from my mind. They came on like the fastest rush on a polo-ground, though of course the lines were not so well closed up as before. I had to confess, infantryman as I am, that even repeaters would have had a poor chance of stopping the rush. Then followed a short halt without dismounting, and then three more long advances, ending with a charge, *mêlée*, and pursuit, were ridden. None of the advances were less than 2,000 yards, and in two out of the three the line was formed after the 'gallop' had been sounded, and not whilst the heads of the columns were still trotting. The charges were beautifully ridden, boot to boot throughout. In only one point could I find an opening for criticism—viz., that the *mêlées* were hardly satisfactory, the men scarcely leaving the ranks, but only making a pretence of doing so. Probably, as it was only an Infantry General inspecting them, they thought it safe to try a little 'eye-wash.' I must confess, however, that under no circumstances have I ever seen this part of the show as well done in Germany as I used to see the 11th Bengal Lancers do it in India. The day wound up with a gallop past, for which I have nothing but praise. The squadrons swept by at their full fifteen miles an hour, horses in hand, and that smooth, rythmical swing of the plumes (they wore plumes that day) which implies a total absence of wasted energy. One might live long at Aldershot and see nothing better. Next day I went down to see the brigade inspection. The brigade turned out two regiments of five squadrons each, the squadrons the same strength as the day before. After the march-past the manœuvring commenced, as the third line of a division in line of squadrons at close interval, at a trot; and it would be difficult to imagine anything more perfect than the way they changed front and wheeled. There was no trace of raggedness anywhere; they looked just like two squares off a chess-board manœuvring about. Then came a repeti-

tion of the gallop to a flank in column of divisions (*Züge*) of the day before. For about 1,500 yards this tremendous column, nearly half a mile long, moved with the same precision as the regiment had done. Then they simultaneously wheeled into half-column to the left. Just at this moment the head of an infantry column emerged from the wood to the right rear, and the General commanding took them for his target. He sounded 'troops about,' which brought them into half-column, right in front, and his gallopers flew. As the leading one reached the right-hand regiment, I heard 'line to the front' sound, and the regiment formed to the front, not at the gallop of manœuvre, but at racing pace, and went straight for the enemy. The three squadrons on the right of the second regiment completed their wheel, which brought them into column, and enabled them to gain the rear of the first regiment, when they again wheeled into line and charged right into the *mêlée* of the first line, and the last two squadrons cantered up and halted as last reserve. I have never seen anything faster or more perfect than the way this attack was delivered. The infantry, of course, had nothing to do with the performance, but were only coming out to drill, and therefore took no notice of the cavalry; but still, had it been an ordinary defile, the cavalry were down on them before 300 men had passed, and under such circumstances that even repeaters could not have given them more than an average of five shots, or 1,500 bullets, of which probably not fifteen would have taken serious effect. The remainder of the inspection consisted of two more long advances and charges against a skeleton cavalry, all delivered with the same precision as the day before; and after a critique and final gallop past, we all marched home together, the squadron leaders congratulating each other on having had two such easy days for their horses. And indeed, in comparison to the previous fortnight, they *had* been easy days, for they had had five days a week of from five to six hours a day, and on these two days the last squadron was back in barracks in three and a half hours only. It is difficult to estimate the ground actually covered, but to the drill-ground and back was eight miles, and in the hour-and-a-half's manœuvring they had covered at least twelve more, or twenty in all. During the preceding period they could never have done less than thirty miles, all told. Yet in spite of this the horses were in perfect condition, far superior to what I remember them at similar periods five and six years ago. Going round their stables afterwards, I was simply astounded at the condition of the animals' legs and sinews. Not a sign of overwork was there amongst them, the sick lines being nearly empty. Afterwards, in conversation with the officers who remembered the old pre-'70 days, I was assured that the improvement in the remounts and the way of managing horses had been so marked, that whereas formerly it was difficult to make up one's mind as to which of the horses ought to be cast, because they were all so miserable, nowadays it was difficult to find enough to cast, so few really being literally past work."

F. N. M.

FIELD ARTILLERY DRIVING.

There are few points on which the Royal Artillery has a better right to pride itself on than the perfection to which it has brought the art of driving between points with the utmost accuracy. The tournament at the Agricultural Hall annually demonstrates the mastery achieved in this particular direction. But the question will obtrude itself on the average observer, whether, on the whole, this accuracy is of any practical advantage; whether, indeed, in the effort to obtain distinction in this particular line, batteries are not sacrificing points of far greater substantial value. For what is it that we really require from our batteries on service? Show driving between a pair of gate-posts, for instance! Far from it. Gate-posts will be rarely met with on service, and even where they are they are generally sufficiently far apart not to interfere with the movements of anything less clumsy than a farmer's wain.

What we really require is a uniform standard of excellence throughout our

batteries, so high that we can count on the delivery of, say, twenty batteries on a given point, perhaps twenty miles distant, in the least possible time, and with the greatest possible certainty. Assuming moderate ground in the first place, the thing required to turn the fate of an action is the simultaneous appearance of from ten to twenty batteries, at decisive range, over against the enemy's position. Will fine driving help us there? Very little, we fancy. What is really wanted is some system carefully thought out and practised in peace, which will ensure that in every team not only does every horse do his own share of the work, but that each employs what strength he possesses to the best possible advantage. But these are points never even remotely touched on in fine driving.

For the last twenty-five years or more in Germany, ever since, in fact, von Hindersinn took the matter in hand, the battery commanders have been working against one another to discover some system by which to ensure the endurance of their horses under the strain that the requirement of modern tactics places on them; chief amongst which is the exact equality of every team, for no battery commander when trotting out in column of route, with perhaps ten batteries behind him, can afford to have a single team break down—not only if the road be narrow does it obstruct the column, but it affords every other driver and gunner in the force opportunity to gibe and jeer at the defeated team, a possibility that the average smart soldier would dread more than anything the enemy could do him. Under pressure of this necessity, the German battery leaders have evolved for themselves a system of training which, judged by the results achieved, is above and beyond anything elsewhere attained. They do not speak of it much, for without doubt many are unconscious of the exact steps of reasoning and experiment by which it has evolved itself. In matters of this sort, this often happens; very frequently indeed is it the case that men are discovered by their superiors to possess in an extraordinary degree the faculty of personally securing results, without being themselves in any way competent to explain how they arrive at them. To take an instance from another field altogether: It is perfectly well known that many an express driver possesses the faculty of bringing his train in to time, day for day, to the second, without ever consulting his watch at all, or forming any definite opinion as to the rate of speed he has been running. Some years ago, for instance, when some very important brake experiments were being made, one of the commission, who was on the engine and furnished with a stop watch, found out to his surprise that the driver's estimate of his speed was frequently as much as 15 per cent. below the actual rate; when he thought he was going sixty miles an hour, as a fact he was going seventy, and not even the evidence of the watch could convince him. To have asked him to explain how he arrived at his results would have been futile; had one succeeded in convincing him that, as a fact, he actually did attain them, he would probably have thought out for himself some personal explanation of the phenomenon, without any scientific value whatever. And the same is frequently the case with horsemen and drivers: they have insensibly imbibed the atmosphere of the command to which they belong, it has become second nature to them to attain certain consequences with certain actions; but as to the why and wherefore, they have never troubled their heads about it at all.

But the keen and intellectual officer has been studying him meanwhile, and, in turn, having thought the matter out to a system, has achieved even better results, which he has communicated to his own battery without, perhaps, having succeeded in making them understand any better; and so it comes to pass that in course of time all batteries become imbued with the same tradition without understanding in the least the process of reasoning on which this tradition is founded. Then comes along the distinguished foreign officer on a voyage of discovery. He is received as a comrade, is told all that the ordinary officer can tell him, and, finding that there is nothing particularly new in it, goes off with the impression that there is really nothing to find out. But all the while there is something, and

something well worth finding out into the bargain. From personal experience we know that this fate has befallen many an inquirer; but from personal experience, also, we can allege that there really is something there to find out, though we confess that we have never got to the bottom of it entirely. It is based on the gymnastic training of the young horse to use his back muscles for draught purposes, and on careful stable management, apportioning accurately to every individual horse the amount of feed necessary to supply the waste of his own tissues, and maintaining each and all of them in the highest possible condition of training possible; indeed, it amounts to nothing less than accomplishing for every individual horse in the battery what the skilled trainer secures in the case of the young horses committed to his charge, but with the important modification that there is no owner's purse on which to draw indefinitely.

If any trained battery officer would make it his special business to get to the bottom of this matter, and to communicate a paper on this subject to this Institution, he might achieve results in our own Service of the highest and most far-reaching value; for all our officers require, in order to equal the finest performances of foreign nations, is some indication of the standard of excellence they have to beat—the sporting instinct of the race does the rest. F. N. M.

BELGIUM.—Autumn Manœuvres.—The 1st and 2nd Division will manœuvre against one another from the 2nd to 12th September, under the direction of Lieut.-General Wauters. The General Idea is that the 1st Division forms the right wing of an army attacking Antwerp; it will occupy the section comprised between the Canal St. Leonard - Schooten and the railway from Antwerp to Breda. The section is supposed to be protected by the Fort of Schooten, the armoured cupola on the practice ground of Brasschaet (considered as a fort), and the Fort of Cappellen (under construction). The 2nd Division forms the mobile reserve of the entrenched camp, and endeavours to oppose the formation of the line of investment.—*Revue du Cercle Militaire*, No. 24.

FRANCE.—The *Cercle Militaire* notes a novel experiment in entraining and detraining troops recently made at Champigny. The idea is due to Captain Barthélemy, of the 12th Artillery, who uses neither ramps nor any other gear whatever, not even platforms. No details are given, for obvious reasons, only the results, viz. :—1 hour 45 minutes, to detrain a 9-centimetre battery on a war footing, and an hour for a squadron of 160 horses. These results do not appear to compare very favourably with home or Indian experience, but further information as to the conditions are desirable. General Saussier is stated to have been well satisfied.

The Autumn Manœuvres.—The Grand Manœuvres this year will take place between Chaumont and Besançon, near Langres, commencing on the 6th September and continuing until the 20th of the same month. The 6th, 7th, and 8th Corps will take part in them; during the latter portion of them the 2nd Cavalry Division will also be present. General Saussier will act as Director-in-Chief as in previous years.

GERMANY.—*Mounted Orderlies for Infantry.*—Special regulations for the new detachments of mounted orderlies sanctioned in the Guard, 1st and 15th Corps, were issued on the 11th May of this year. The general purport is as follows :—

The mounted orderlies for infantry are intended for circulation of orders and information between the superior staffs and the infantry; when the latter are thrown on their own resources, then, but only then, they will perform the duties of scouts as best they can. They are in no way expected to replace cavalry, but only as a make-shift in emergencies.

Each detachment consists of one captain, one first and two second lieutenants, one quartermaster (wachtmeister), one vice-quartermaster, four sergeants, six corporals, two "kapitulanten," twenty "gefreite," seventy-four privates, and 108 horses exclusive of officers' chargers.

The detachment is assigned for administration and discipline to a cavalry regiment usually at corps or divisional headquarters.

The detachment is specially recruited for three years' service. Only men accustomed to the care of horses, and with good eyesight, intelligence, and education, will be accepted. No one-year Volunteers will be allowed.

The officer commanding the detachment is personally responsible for the training and education of both men and horses.

The object to be attained in both cases is :—The unconditional obedience of the horse to the rider, bold individual riding, a good eye for country and comprehension of the map, and the delivery of clear and intelligible reports of matters personally observed to his superiors.

No manœuvring in closed bodies is to be undertaken, the troop will march only in sections and half-sections.

Theoretical instruction will take place daily on the lines indicated in the Field Service Regulations, special attention being devoted to the following points :—

Delivery of verbal and written reports, map reading, points to be attended to in reconnoitring villages, bridges, roads, fords, etc., recognition of the formations employed by the different arms and estimation of their strength, the use of the telescope, judging distances, and knowledge of the officers within the corps command, care of horses and practice of fitting shoes. Special attention to be devoted to the art of long-distance riding, both theoretically and practically.

SWITZERLAND.—Autumn Manœuvres.—The 1st Corps will manœuvre this autumn under the direction of Colonel Ceresole. The staffs will be formed on the 25th August, and the troops begin work on the 28th. From the 28th to 31st August, Company and Battalion drill. 2nd to 6th September, Regiment *versus* Regiment, and Brigade *versus* Brigade. 7th, 9th, and 10th, Divisional Manœuvres, and on the 11th the whole corps against a skeleton enemy. The regimental and brigade manœuvres of the 1st Division will take place between Geneva and Lausanne, those of the 2nd Division between Grandson and Cossonay. Divisional operations will be between Nyon, the river Aubonne, and La Venoge.

FOREIGN PERIODICALS.

NAVAL.

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens.*—No. 7. Pola and Vienna: July, 1895.—"The Naval Operations in East Asia up to the Capture of Port Arthur inclusive." "Upon the influence of Measurement on Types of Racing Yachts." "On Submarine Torpedo-boats." "The Salvage of the English steamer 'Yarrowdale.'" "The Halpine-Torpedo." "The Armstrong Cruisers" (with plate of "Yoshino"). "The English torpedo depôt-ship 'Vulcan'" (with plate). "The Steam-Trials of the German third class cruiser 'Gefion'" (with plate). "The Italian first class battle-ship 'Sardegna'" (with plate). "The Engines of the 'Magnificent'" (with plates). "Foreign Naval Notes." "The United States Naval Estimates." "Book Notices."

DENMARK.—*Tidskrift for Söväesen.*—No. 2. Copenhagen.—"On the Use of Sails in Steamers." "The Use of Sails in Theory and Practice." "A Criticism on the Article by Sub-Director Rasmussen." "Foreign Navies in the Year 1894." "The Naval Battle off Hayjang." "On Hygienic Experiments in Ships of War."

FRANCE.—*Revue Maritime et Coloniale.*—Paris: April, 1895.—"Naval Warfare"; analysis of Vice-Admiral Colomb's Work (*continued*). "Description and Working of the Hydraulic Machinery for 34-centimetre Guns, Model 1887" (*concluded*). "Geometry of Diagrams" (*continued*). "Naval Chronicle; Austro-Hungarian Naval Estimates for 1895; England, the 'Vulcan'; United States, trials of 'New York'; Smokeless Powder and Trials with Shells; Italy, Torpedo-boats; Russia, New Constructions and the Volunteer Fleet." "The English Naval Manœuvres of 1894." "Notices of Books." "The Sea Fisheries."

Le Moniteur de la Flotte.—Paris: 1st June, 1895.—"The Battle off the Yalu" (Marc Landry). "The Semaphore Signalmen." "Colonial Notes." "Naval Notes, Home and Foreign." "Official Announcements." 8th June.—"The Congress of Naval Architects" (Marc Landry). "Rear-Admiral Fleuriais." "The Port of Rochefort." "Colonial Notes." "Naval Notes, Home and Foreign." "Official Announcements." 15th June.—"Cellulose" (Marc Landry). "The Budget Proposals for 1896." "Colonial Notes." "Naval Notes, Home and Foreign." "Official Announcements." 22nd June.—"The Congress of Naval Architects." "Balloons at Sea." "Colonial Notes." "Naval Notes, Home and Foreign." "Official Announcements." 29th June.—"At Kiel" (Marc Landry). "The Naval Manœuvres of 1895." The Parliamentary Commission of Enquiry into the Navy." "Colonial Notes." "Naval Notes, Home and Foreign." "Official Announcements."

La Marine Française.—Paris: 10th June, 1895.—"*À propos* of the 'Magenta,' a letter from Admiral Vallon to M. Paul Fontin." "Proposed Report on the Organisation of the 'État-Major-General and Cabinet of the Minister of Marine.'" "Some more Remarks on Coast-Defence." "The Mail Services and Mobilisation." "Naval Chronicle, Home and Foreign." "The opinion of Yachtsmen on the decision of the Union." 25th June.—"The Dockyard and Arsenal at Rochefort." "Some more Remarks on Coast-Defence" (*continued*). "The Torpedo-vessels of different countries." "Naval Chronicle, Home and Foreign." "The Merchant Navy and Foreign Commerce." Notices of Books."

Le Yacht.—Paris: 1st June, 1895.—"The Question of Tonnage and Circular issued by the French Yachting Union." "Yachting News." "The Loss of torpedo-boat No. 20." "The first class battle-ship 'Hoche'" (with plate). "The English Regattas." "Naval Notes, Home and Foreign." 8th June.—

"Rear-Admiral Fleuriais." "The Government Transports" (E. Weyl). "Yachting News." "New Medal of the Sailing Club of Paris" (with plates). "Carrier Pigeons at Sea." "The Brazilian cruiser 'Benjamin Constant.'" "Naval Notes, Home and Foreign." 15th June.—"The North Sea and Baltic Canal." "Yachting Notes." "The Alterations and Repairs to the Brazilian battle-ship 'Riachuelo.'" "The 'Valkyrie' No. 3" (with plate). "The first class Austrian Cruisers" (with plans of the "Kaiser Franz Josef"). "The English Regattas." "Naval Notes, Home and Foreign." 22nd June.—"The Inauguration of the North Sea and Baltic Canal." "Yachting Notes." "The Meeting of the Institution of Naval Architects at Paris." "The Mediterranean Squadron at Biserta" (with photographs of "Wattignies" and "Léger," passing through canal, and bird's-eye view of canal and harbour). "Naval Notes, Home and Foreign." 29th June.—"The Inauguration of the North Sea and Baltic Canal" (E. Weyl). "Yachting Notes." "The first class battle-ship 'Redoutable'" (with photograph when ashore under the Carraque battery near Toulon). "The Imperial Yacht 'Hohenzollern'" (with photograph). "The Institution of Naval Architects at Paris." "Naval Notes, Home and Foreign."

GERMANY.—*Marine Rundschau.* Berlin: July, 1895.—"The Canal from the Atlantic to the Mediterranean" (with two plans). "The 'Nix' and 'Salamander' exchanged with the English Government for the 'Thetis,' and re-named 'Recruit' and 'Weser.'" "The Dangers attending the keeping of Coal in the Bunkers." "The German Sea-Trade." "Naval Notes: England, France, Russia, and United States." "Notices of Books," etc.

ITALY.—*Rivista Marittima.* Rome: June, 1895.—"The Military Situation in the Mediterranean" (D. Bonamico). "A Criticism of Captain Mahan's 'Influence of Sea-Power on History'" (C. Manfroni). "The Italian Maritime Commercial Association." "The Gales at the Azores." Letters to the Director:—"On the use of oil for calming the sea." "Water-tube Boilers" (N. Coliani). "Some Remarks on an Article by M. Normand on the Vibrations caused by Marine Engines." "Naval Notes, Home and Foreign." "The Mercantile Navy: Navigation on the Danube; The Hungarian Mercantile Marine." "Application of Hansen's Problems to Coast Navigation." "The North Sea and Baltic Canal." "The new 'Valkyrie' and the 'Defender.'" "Notices of Books."

RUSSIA.—*Morskoi Sbornik.* St. Petersburg: May, 1895. — "Provisional Regulations about Powder and other Gunnery Stores on board." "On the best means of avoiding Damage to Ships through Collision." "The use of Torpedoes during the Chino-Japanese War." "The Torpedo and Q.F. Guns of large Calibre." "The Manufacture of Armour-plates in France." "War-ships with Three Screws." "The Telephoto." "The Hydrographical Work in the Arctic Ocean in 1894." June, 1895.—"The International Regulations for avoiding Collisions at Sea."

SPAIN.—*Revista General de Marina.* Madrid: June, 1895.—"Elementary Electro-dynamics." "Impressions during a Journey through the United States of America." "Succour to the Wounded and Shipwrecked in Naval War." "The Japanese Fleet." "Light Armour and its Future." "A Reminiscence of the Hurricane in the Antilles of the 24th September, 1894." "The Baltic and North Sea Canal." "Vocabulary of Powders and Modern Explosives." "Naval Foreign Notes." "Notices of Books."

MILITARY.

FRANCE.—*Revue Militaire de l'Étranger.* June.—"Mounted Orderlies in the German Infantry." "The Organisation of Convoys in Mountain Warfare, Italy." "The Chino-Japanese War." "British Transport in African Expeditions."

Le Spectateur Militaire. 15th June.—"Bullet-proof Shields for Infantry" (Le Brun); the writer wishes to see the old Roman "Tortoise" or something analogous revived. "The Results of War, 1812-70"; a study of losses in different campaigns; worth reading.

Revue d'Artillerie. June.—"The Material of Field Artillery"; a study of the proposals of General Engelhardt of the Russian Artillery, with sketches explaining his new anti-recoil break. "Note on the Organisation of the Russian Field Artillery, 1895"; both worth study. "The Corps of Artillery of France"; historical study, by Captain de Mauny; very interesting. "Armstrong Field Artillery" (Captain Benoit). "The Artillery at the commencement of the Revolution"; historical study, by Captain Roquerol (*continued*). Review of Colonel Harts' "Reflections on the Art of War"; favourable.

Revue de Cavalerie. June.—"The Austro-Hungarian Cavalry" (by an Italian cavalry officer); worth reading. "Notes on the French Army, 1792-1808" (*continuation*). "The Instruction and Leading of Cavalry"; translation of General von Pelet-Narbonne's work, "Operations of the 5th Division of the German Cavalry from the 12th to the 15th August." "The Cossack Lava." "Formations for Battle, March and Rendezvous in the three arms of the German Army"; points necessary for reconnaissance and field-firing projects. "The Remount Department and its purchases."

Revue du Cercle Militaire. 1st June.—"The Colonial Troops of Holland: Note on the Indo-Netherland Army." "The Artillery in combination with the other arms." "How to keep one's feet warm"; keep the muscles of the toes and instep constantly in motion. 8th June.—"The Army Estimates for 1896" show an increment of 13,000,000 francs. "Rations in the Italian Navy." 15th June.—"The preliminaries of the War in Madagascar" (with map). "The Artillery in combination with the other arms." 22nd June.—"The Italian Army List for 1895." "The Navy Estimates for 1896" show 2,000,000 francs increment only. 29th June.—"To the North Pole in Balloons." "The Dutch Colonial Troops" (*conclusion*).

Journal des Sciences Militaires. June.—"Strategy," by General Lewal (*continued*). "The Decisive Attack" (unsigned). "Field Service Regulations"; attempt to indicate a practical system of instruction, by Captain N.B. "The Organisation of the Nation in Arms"; a thoughtful study, by M. C. de L. "The Campaign of 1814" (Commandant Weil). "A word on the Social *rôle* of the Officer"; worth reading.

L'Avenir Militaire. 7th June.—"Progress (?) in the French Army" discusses an article by Captain Gilbert in the *Nouvelle Revue*, written to show the complete breakdown of M. Freycinet's reforms, and advocating a return to the original Army Bill of 1875; well worth reading. "Iron Rations"; some practical hints. "Uniformity"; common-sense reflections on the prevailing craze in the French Army. "Uniformity, how many crimes have been committed in your name!" "Supplementary Estimate to the War Budget." "The Army in Parliament." 11th June.—"The Tactics in the Battle off the Yalu." "Raising the Status of the Lower Cadres in the Train and Commissariat"; shows up the strain put upon these services by the Madagascar Expedition. "New Regulations for Field Artillery Fire." "The Army in Parliament." 14th June.—"The Right to Punish"; a page of French colonial history. "Provisional Drill Regulations for the Artillery," comments. "Fishers in Troubled Waters"; *à propos* of the Kiel festivities, sound and sensible as this paper always is." "New Constructions in the Navy, 1896." "The Publication of the Treaty of the Triple Alliance." "The Army in

Parliament"; proposal to pull down the enceinte of Paris. 18th June.—"The Mobilisation of the troops in Algiers." "Article 29 of the Law of Recruiting." "European Intervention between China and Japan." "The Parliament in time of War." "The Balance of Power in Europe." 21st June.—"The Battle off the Yalu." "Centralisation in West Africa," criticising adversely recent administrative reforms in that region. "Medical Statistics for the Army in 1892"; death-rate 6·24 per 1,000 shows a considerable improvement. 25th June.—"Exaggerated Enthusiasm," deprecating the premature jubilations of the press on the successes in Madagascar. "Japan and the Balance of Power in Europe"; review of a pamphlet by F. de Villenoisy. Conclusion: Russia has pulled the chesnuts out of the fire for England. "The Promotion of Lieutenants." "Report of the Schools of Artillery Fire in 1894." 28th June.—"Unjustifiable Expenditure"; read. "The Defence of our Coast Line"; interesting with regard to the Cotentin Peninsula. "The Debate on our Colonial Policy." Comments on events in Madagascar run through the whole issue, and are characterised by marked fairness and common sense.

GERMANY.—*Jahrbücher für die deutsche Armee und Marine.* July.—"The Capture of Bonn by the Elector Frederic III. of Brandenburg, 1869." "The Evolution of the Bavarian Field Artillery during the last century, with special reference to its instruction in shooting since 1874," by Major-General von Speck. "A Russian Opinion on the German Officers"; well worth reading; the points which strike the Russian author being those in which his own Service is most deficient. "Gustavus Adolphus as a Soldier." "Soldiering in the Thirty Years' War"; both very interesting. "Remounts in the Russian Army"; *résumé* of an article by General Suchomlinow, director of the Cavalry School, St. Petersburg, on the decay of the Russian horse-breeding; cause assigned: emancipation of the Serfs, and consequent disturbance of all agricultural relations, with resulting famine. "Book Notices," etc.

Militär-Wochenblatt. 1st June.—"Horse Artillery: What it is and what it ought to be"; a thoughtful article; Q.F.'s, and a suitable training in their employment, the desiderata. "The Generals of the Main Army," by Fritz Hoenig; reply to some critics. "German South-west Africa." 5th June.—"Vital Questions for the Cavalry"; continuation of an excellent, practical paper. "The French Colonial Army." "The latest Re-organisation of the Bulgarian Army." 8th June.—"The Kriegsakademie"; discussion of changes in the curriculum. "The Decisive Battles on the Main, 1866"; criticism of Hoenig's book by Boguslauski. "A Lamp for Field Service"; proposes a powerful petroleum lamp, to light up the ground in front of the pickets when attacked; our signalling lamp would be about the thing. 12th June.—"Notes on the French Cavalry"; from French sources. "Proposals for a more practical Trace Hook for the Field Batteries." 15th June.—"The Cavalry Division in peace time." "The French Army List for 1895"; general summary of changes, etc. 19th June.—"The Organisation of the Field Artillery." "The River Eider, according to the oldest historic information"; *à propos* of the North Sea Canal. "The Unconditional Obedience of the Horse to the Bridle," by Plinzner, the Emperor's equerry; worth reading. 22nd June.—"Two Years in the Chilian Service." 26th June.—"Some remarks on 'Orders for Brigades and Divisions, drawn up in accordance with von Scherff's views,'" by General von Scherff; worth careful reading. "Modern Military Research," by Captain Dechend, of the General Staff. 29th June.—"The Health of the French Army." *Supplement.*—"The Employment of Reserves in the Battle of Vionville-Mars la Tour, with special reference to the 5th Division," by General von Wodtke. "My Experiences in the Battle of Vionville-Mars la Tour," by Colonel Schaumann; has special reference to the batteries which accompanied the 38th Brigade (von Wedell) in their celebrated attack; should be compared with Scherff's "Kriegslehren, II.," and Hoenig's "Taktik der Zukunft"; very interesting.

Neue Militärische Blätter. June.—"Sea Power" (unsigned); a very able review of Mahan's work, explaining the true significance of his ideas for nations situated like France, Germany, and Russia. "The Military and Political Importance of Central America," by Otto Wachs; discusses the Panama Canal, and indulges in a jeremiad over Britain's decaying Navy and coming downfall. "Observations on the History of Arms and Equipments," by Reinhold Gunther; a very interesting paper. "Eckernförde," by Admiral Batsch; a history of the naval operations during the Schleswig-Holstein Campaign in 1848-9. "The Chino-Japanese War." The Line of the Sereth and the Bastion of the Siebenburgen." "The Mobilisation of the British Fleet at Chatham, 1894"; compiled from British sources; verdict favourable. "German Colonial Administration."

Deutsche Heeres Zeitung. 1st June. — "French Views on Autumn Manœuvres," showing steady progress made in last few years. "Horses and Horse shoes," by Colonel Spohr, a well-known expert; worth reading. 5th June. —"Miniature Iron Targets," for confined spaces, on the Morris system. "Preparation for War," *à propos* of the debate in the French Parliament on the Army Estimates. 12th June.—"Penetration of the New Rifles"; summary of the English report of last year taken second-hand from the *Revue du Cercle Militaire.* "Russia: Training of Riflemen"; where circumstances permit the Russian rifles are trained in woodcraft by being taken out on shooting expeditions after game. 15th June.—"The right of Neutrals to block their Waterways" discusses whether neutral Denmark would have a right to block the Sound and the two Belts to foreign war-ships. The Kiel Canal has raised the question. 19th June.—"Aden and the Neutrality of the Suez Canal." "Life of Field-Marshal Graf von Gneisenau"; review of Delbrück, new edition. 22nd June. — "Armoured Turrets" discusses the designs shown at Antwerp last year. 26th June.—"The Opening of the Emperor William Canal"; the critic thinks the German battleships the best and the German sailors also, but is disappointed with German cruisers. 29th June.—"Episode from the Action of Skalitz, 28th June, 1866."

SWITZERLAND.—*Revue Militaire Suisse.* 15th June.—"National Military Re-organisation." "The *rôle* of Cavalry according to the Instructions of 31st August, 1894." "A new rifle by M. Daudeteau" (with plate). With this number is also issued the full text of the Report of the Federal Military Department, 1894.

THE UNITED STATES.—*The United Service.* June.—"The Regular Army and the National Guard." "Chronicles of Carter Barracks"; fiction. "The English Food Gifts after the Siege of Paris" (unsigned). The author, after careful personal enquiry, considers the suffering attributed to the siege as much less than usually imagined, and considers that the spirit of the English help was bitterly resented by the French, who accepted the help, but hated the hand that gave it. "A Forgotten General"; the career of an American Consul who in his time played a very important part in Morocco. "The sea-coast guns of the U. S. Services." "Military Order of the Loyal Legion of the United States."

Journal of the United States Artillery. April (received late). — "The Resistance of the Air to the Motion of Oblong Projectiles, as influenced by the shape of the head," by Captain J. M. Ingalls. "Trained Artillery for the Defence of Sea-coast Forts" (Lieutenant S. E. Allen). "Range and Position Finding" (Lieutenant W. Lassiter). "The uses of the Field Artillery Fire Game" (Lieutenant J. P. Wesser). "Coast Artillery Fire Instruction" (Lieutenant E. M. Weaver). "Okehampton Experiences," by Major A. J. Hughes, R.A.; reprinted from the *Journal R. U.S.I.* "Notes," etc.

NOTICES OF BOOKS.

Kriegslehren in kriegsgeschichtlichen Beispielen der Neuzeit. Von W. von SCHERFF, General der Infanterie z.D. *Drittes Heft: Betrachtungen über die Schlacht von Gravelotte-St. Privat.* Berlin: Mittler und Sohn, 1895.

In the notices of the first and second sections of this new work by General von Scherff, allusion has already been made to the method of thought that characterises his writings, and to the special purport of the present series. Briefly stated, his object is to show that a happy mean exists between the advocates of the extreme "every man for himself and God for us all" school of taticians, and those who would confine all initiative and freewill to the omniscience of the Supreme Commander to guide them through the trouble and turmoil of the modern battle-field. It is really only the struggle between the advocates of freewill and predestination transferred to another field, with the difference that on the one side "omniscience" is an inconceivable attribute of fallible humanity, and on the other that absolute "freewill" is equally opposed to the conditions of existence of a modern Army.

In the abstract the point hardly seems worth the trouble of discussion—the same problem encounters us in every field of human activity; and provided the conditions remain tolerably constant, common-sense humanity rarely fails to supply a sufficient answer. Unfortunately for the progress of military science, it is precisely this condition of uniformity which is so seldom to be met with in the evolution of tactical science. Peace is chronic, war occasional. Weapons change, the quality of the troops varies from hour to hour, and, finally, the methods best suited for employment under the excitement of the battle-field have to be thought out in advance under the totally different conditions of the parade ground.

In days when warfare was chronic, experience soon decided on some practical solution of the question, which contained in itself the best available guarantee for ultimate success, and, as a rule, took little account of the individual life. By degrees a form of attack becomes stereotyped, and with small variations is so uniformly adhered to that it comes to be considered as a "Normal Form," which in itself, by the mere fact of its application, guarantees those who employ it against failure.

In a long-service Army, in which no personal responsibility is thrown on the company officer for the training of his men, the tie between officers and men in peace time is generally loose. The feelings which, on service, really bind a leader to his men are ignored, and the possible consequences of the fetish worship of the "Normal Form of Attack" in incompetent hands are lost sight of, or condoned, since it saves men the trouble of thinking for themselves.

In a short-service Army things are different; there the responsibility of the regimental-officer for the efficiency of his men begins from the first year of his enrolment, and the tie between them is consequently closer. Launch such an Army, trained on the parade ground, against a determined enemy, and a thousand busy and fairly capable minds will at once be at work to criticise the results of the inevitable blunders, in which they themselves took part, and to point out how the local disasters and slaughter which occurred around them might have been obviated or alleviated by action on their own part, had the rules of the Service permitted it.

An officer's actual view of a field of battle generally varies in direct proportion to his rank, *i.e.*, the higher his rank the wider his experience, and *vice versâ*; but since in any known organisation, the lower ranks always enormously outnumber the higher ones, it also follows that in any Army there must necessarily be more

officers endued with the false conceptions resulting from insufficient knowledge than with the sounder opinions that a wider grasp of the actual facts would have enabled them to acquire.

Again, the practical experience of one day's hard fighting will make infinitely more impression on the average man than twenty years of study, and bearing this in mind a key is afforded to us by which we can in some measure explain the almost incredible phenomena the history of the tactical evolution of the German Army during the last twenty years presents to us, viz., first an outcry from the officers of a victorious Army against the losses, not by any means unprecedented, with which their victories had been purchased; and secondly, the extraordinary persistence with which a numerically very powerful section of the military press have clamoured for increased delegation of responsibility to the junior ranks, even after these had already attained a far more liberal allowance of freedom than has yet been accorded to them by any other Army in Europe.

Whether the military press represents at all accurately combatant opinion, is at least open to question. To the ordinary student of the German Army it would certainly seem that Scherff overrates the importance of these writers, for though the regulations pushed to their logical conclusions would certainly justify the employment of the forms to which he takes exception, in practice they are never or only rarely seen.

The following lines, condensed from his book, will explain better the evil against which he inveighs. "The order is sent to a divisional general to attack. Mindful of the disadvantages of breaking up units, and of the advisability of large reserves, he disposes his two brigades one in front of the other, and instructs the leading brigadier as to his objective; following the same lines of thought, the brigadier forms his regiments, one in front of the other, and directs the leading one to attack, and so on at each stage in the chain of discipline, till ultimately the leading section moves off with four out of its twelve men extended, the remainder in reserve." This, of course, is an extreme never attained in practice, but in analysing the details of the fighting, both at Gravelotte and St. Privat, Scherff has no difficulty in proving the existence of this tendency, and also the very serious consequences that resulted from it. Where divisions should have attacked as a whole, four battalions in first line, four in second, and four in reserve, meeting the enemy simultaneously on every point on a broad front, some thousand yards in extent; actually companies only where put in, frequently separated by considerable intervals both of time and space. Against any arms such tactics could have but little chance of success, but under the special conditions created by the disparity in armament such conduct was simply suicidal. To prevent such mistakes in the future, von Scherff proposes that the limit of a commander's power, when acting as a unit in a larger whole, should be more satisfactorily defined, and that some simple plan for the normal formation of any unit when acting in combination with others should be adopted, the only conditions this plan must necessarily fulfil being, that the front should be adequate to the purpose in view, as many rifles in the firing line as can conveniently find room there, and supports and reserves following each other at such distances that timely support to the leading lines when checked should be ensured; all possible liberty within these limits being left to individuals, precisely as in the case of attacking cavalry, where every squadron leader is free to alter his formation if the nature of the ground requires it, or if on the flank of a line to wheel up to meet a threatened attack.

Reverting to what was said at the commencement of this article on the evolution of fighting forms in war time, and referring to military history, it will be evident that during every long-continued era of war, a system, differing perhaps in details according to the quality of the troops, has invariably evolved itself, and is nothing more or less in spirit than the three-line principle of the old Peninsular days, the only difference in detail being the increased distances between lines to meet the growing range of the new weapons; and the practice evolved by years of

war experience, of advancing in that formation which ensures the maintenance of discipline in the highest degree, in place of in that one in which the losses may perhaps be locally less, but the difficulty of control is undeniably the greatest.

The first and second sections, dealing, the former with the strategy, the latter with the higher tactical leading in the battle, are both clear and convincing, but afford little information that is new. It is to the third section, in which the fighting round Point du Jour, and for the possession of St. Privat are subjected to detailed analysis, that attention should be specially directed.

For the former, Sherff borrows largely from Hoenig, with whom he is, in the main, entirely in agreement; the assault on St. Privat is, however, thoroughly original, and combines the whole incidents of the day into a clear and readily intelligible picture, superior to anything hitherto published. As the alleged slaughter of the Prussian Guard on this occasion forms the basis of nine-tenths of modern tactical theory, a few more words on the subject may not be out of place. We all know that heavy losses were incurred, and much confusion resulted from the attempt to change direction in heavy-massed columns within the effective range of the Chassepot. It is not so generally known, however, how it came to pass that this change of front became necessary on the particular spot on which it occurred. Scherff's account makes it very clear that it was simply a matter of blind chance and nothing else. The first division, advancing in rendezvous formation without any definite orders as to its subsequent employment, which at the moment, of course, could not be foreseen, had halted when it drew near the battle-field, and had lain down to await further developments. When, some time afterwards, the order to deploy and attack St. Privat actually reached them, it became apparent that, owing to the presence of the village of St. Marie on their left flank, the deployment could not be effected without either advancing or retiring to gain space. It does not appear that anyone thought of retiring, nor under the circumstances of the moment could such an idea have been entertained, so the order was given without hesitation to advance and then change direction, with the results with which everyone is familiar. Another point also is brought out that deserves to be remembered, viz., that owing to some oversight no special group of batteries had up to the moment of advance being directed to take St. Privat itself under fire, and hence the defenders of that post were in the very most favourable circumstances possible to make the most of the target offered them, viz., practically unmolested by any return fire whatever. That under these circumstances the assault failed is not to be wondered at. It would have failed equally against even muzzle loaders. But to use this instance as the foundation of a sweeping generalisation, condemning the offensive against troops armed with breech-loaders wholesale, seems to show a deplorable deficiency in the critical capacity in those who avail themselves of it.

Souvenirs Militaires, 1866-70. Par Général LEBRUN. Paris: E. Dentu. Price, 5s. 8d.

One of the most interesting works yet published on the secret history of the events which preceded the Franco-German campaign. It has long been an open secret that the Emperor of the French had very strong reasons indeed for expecting that, in the event of a war with Germany, he would not stand alone—indeed, except on this supposition his distribution of his troops at the commencement of the war would remain altogether incomprehensible; but how strong these reasons were, or how far his allies were held to have committed themselves to his mind, has hitherto remained mere matter of conjecture. In this work we find, for the first time, the whole record of the *pourparlers* that had passed, and the full details of the plans actually submitted and agreed to in principle by the military advisers of the two parties.

The political importance of these revelations may be passed over here unnoticed, but the military documents deserve more than passing attention. No more glaring contrast can be conceived than is revealed by a comparison between

Moltke's memoir for the strategic development of the North German forces, written in 1868, and the plans of campaign, framed in accordance with old-fashioned strategical dogma conceptions, whether by the Emperor Napoleon III. or the Archduke Albrecht of Austria.

On the Prussian side, all is simplicity itself. Every available man, horse, and gun, massed in security on the shortest line to the enemy's capital, and then launched out to find his field army and beat it. "Only the layman," says Moltke, "believes that he can trace throughout the course of a campaign the prosecution of an original plan, arranged beforehand, in all its details, and carried out to its very close."

On the other side, exactly what Moltke condemns above as mere amateur work: a plan of campaign, somewhat grandesque in outline, involving marches tabulated for six weeks in advance, and ignoring entirely the human nature element, which so largely influences all war time decisions.

It is worth while to compare the two schemes side by side, noting that Moltke wrote in January, 1868, and the French and Austrian plans were discussed in June, 1870.

Practically events on the Saar would have taken the same course that they actually did, only that the first battle would probably have been more decisive, and would have been fought somewhere near "Kaiser lautern," and the news of it would have reached the French Army destined for Southern Germany whilst these were struggling through the passes of the Black Forest, desperately opposed as they would have been at every step.

In all human probability the final catastrophe of the Army of the Rhine would have been far more sudden and dramatic in its intensity than it actually was. Instead of making good its retreat upon Metz, there to hold 200,000 Germans at bay for three long months, it would have been cut off and surrounded and compelled to lay down its arms somewhere in the vicinity of St. Avold, and within a week of the commencement of operations.

What chance would then have remained for the common plan agreed upon, in which Austrian assistance was only due on the forty-second day after mobilisation? The history of previous coalitions will supply the answer.

One other point remains to be noticed, viz., How did it happen that men of the undeniable ability of General Lebrun, and the Archduke, came to be so very far out in their calculations? The complete answer would require a volume, but the line on which each may think out the matter for himself can be sufficiently indicated in a few lines. The essential feature of the French revolutionary warfare was that it took no count of the waste of human life it involved; further, the Armies built up during active service were held together by a discipline based on remuneration of the individual for his services, not on a sense of duty alone, that is to say, that great deeds were accomplished, not because duty dictated them, but from motives of self-interest. Such a system could only hold together as long as victory rewarded its efforts, as soon as disaster overtook it its own inherent vices involved it in utter ruin. Unfortunately, when defeat did overtake it, climate, indeed anything but the true reason, received the blame; and the conduct of the victorious campaigns, with all the grave faults of organisation they disclosed, was held up as a model for future generations to copy. Waste of human life, disorganisation in the staff, even dishonesty in supply, were all put down as inevitable conditions of warfare—they had won in spite of them before, and would win in spite of them again; no single individual could re-organise affairs himself, and the element of personal interest became only more accentuated with each step on the downward path of revolution and disloyalty: hearty co-operation between a number of men became an absolute impossibility. In Germany things were on a totally different footing; taught in the bitterest school of defeat through which any nation had ever passed, and still loyal to their royal head, it was possible for them to secure the most thorough co-operation of all ranks of society in the work of re-organisation.

The good of the Service came first, and duty was elevated to the position of the national religion. Hence Army statistics became reliable data on which to make calculations, and when these calculations showed that on a given day and at a given spot so many thousands of men, horses and guns could be concentrated, the fact was as absolute as any other mathematical calculation. As General Lebrun's book shows, this was precisely what was not the case in France, and hence the beginning of all her troubles. Moreover, in the absence of any organised system of combined labour, individuals who speculated on such matters were compelled to simplify the terms of the problem within such limits as a single brain could deal with. Like the pure mathematician, they eliminated all such considerations as the friction of the moving parts, the strength of materials, etc., thinking of corps, divisions, and so forth, as compact units, as easily moved about from place to place as the pawns on a chess board; and this habit of mind once acquired proved as fatal to them as it daily does to the drawing-office school of designers, who design engineering works without reference to the practical requirements of the constructing engineer. The Sukkhur Bridge, by the way, is a notable case in point.

It is not intended to reflect in any way on the capacity of the two leaders, whose conduct it is endeavoured to explain; all that it is attempted to do is to show that the mistakes events prove them to have made were the inexorable consequence of conditions beyond their individual control, and that such mistakes can only be guarded against by the living spirit of duty throughout all ranks, which alone can be relied on to insure that in any given Army the facts stated on paper have their concrete equivalent on the ground.

History of the 50th (The Queen's Own) Regiment. By Colonel A. E. FYLER. London: Chapman and Hall, 1895.

The old Fighting Fiftieth is unfortunate in the sense that it has hitherto had no published record of its services; to Colonel Fyler, who served in the battalion for thirty years and commanded it from 1880 to 1883, the officers owe a debt of gratitude for the pains he has bestowed upon their first history.

The regiment is rich in gallant deeds—a fact which the author has seized upon to make the history an account only of the campaigns in which it has been engaged, while its less brilliant but scarcely less important services in time of peace have been ignored. It was a favourite observation with the Duke of Wellington, and one which he desired to impress as a principle, "That no permanent success in war was ever achieved without discipline in peace." A regiment's war services may be of primary interest to the officers; but what living soldiers—condemned by misfortune to live in times of almost chronic peace—really want to know is, how the tool was fashioned which achieved such glorious results. Upon this point almost all regimental histories are silent, but it is the one on which information would be most valuable.

Colonel Fyler has certainly compiled an accurate and able account of the services of the 50th, from its first services during the Seven Years' War to the conclusion of the New Zealand War in 1866. The regiment took part in the operations in Corsica in 1794-5, in the campaign in Egypt in 1801—where it obtained the nickname of the "blind half-hundred," from the number of men who suffered from ophthalmia—and in the expedition to Copenhagen in 1807.

The 50th did good service at the battle of Vimeiro in 1808. At Corunna, under Major, afterwards Sir Charles, Napier, it earned much distinction, with a loss of five officers, and 180 rank and file killed and wounded. The gallant Napier, surrounded by the enemy, was dangerously wounded and taken prisoner after a desperate attempt at escape, in which his life was saved by the intervention of a French drummer. The part played by the regiment in the Peninsula is very well told by Colonel Fyler, and "that fierce and formidable old regiment," as it was called by the historian of the Peninsular War, fought with a desperation

worthy of high admiration. The regiment is next found fighting in India; and at Punniar, Moodkee, Aliwal, Sobraon—where half the regiment was placed *hors de combat*, and added new lustre to its already high reputation. In the Crimea its good services were continued. It was the only regiment in the 3rd Division engaged at Inkermann, and during the siege of Sebastopol lost 340 men by disease. That the men upheld the name of the regiment may be gathered from the fact that twenty-seven non-commissioned officers and men received either the distinction of the Legion of Honour, French Medal, or Medal for "Distinguished Conduct in the Field." From 1864 to 1866 it saw its last experience of active service in New Zealand; since that date its services are confined to the narrowest limit of a page and a half of print.

The plans and maps are excellent, and the coloured drawings of the colours equally so; but the illustrations of the uniforms of the 7th Marines and Shirley's regiment might well have been omitted, as neither of those corps has any connection with the present 50th. In recent years an extraordinary custom, originating in the War Office, has prevailed in regard to regimental pedigrees. According to this innovation, any regiment is entitled to claim as its parents all other regiments which have by mere chance borne a similar number on the list of the Army. It is the case with the 5th Lancers, the 18th, 19th, and 20th Hussars, the Leinster Regiment, and the Royal Malta Militia, all of which regiments bear on their standards or colours victories fought long before they were raised. Colonel Fyler has gone on the same principle, and claims that his regiment is the descendant not only of the 7th Marines but of Shirley's regiment in addition, though it has no connection whatever with either of them. The former bore the number 50, it is true; but was disbanded in 1748 - nearly eight years before the present regiment was raised. Shirley's regiment, a provincial corps, and by no means an efficient one, also bore the number 50, but can by no possibility bear any connection with the present regiment, because both were in existence at the same time; the former being disbanded on its surrender to the French under Montcalm in December, 1756, and the latter having been called into existence some twelve months previous as the 52nd Regiment. Whatever theories people may elect to hold, it is impossible that two corps which existed at the same time in different parts of the world can be one and the same. The present 1st Battalion The Queen's Own (Royal West Kent) Regiment, or 50th Foot, was raised in October, 1755, as the 52nd Regiment, the commission of the first commanding officer, Colonel James Abercombie, who was shortly afterwards promoted Major-General, being dated 18th December, 1755. Colonel Fyler's statement that the formation could not have been earlier than December, 1756, therefore requires correction, as does also his remark that Colonel Studholme Hodgson was the first Colonel of the regiment. With these exceptions the book is open to little criticism, and the regiment is to be congratulated upon having found an enthusiastic and capable historian as Colonel Fyler. R. H.

Notes on the Outlines of Strategy (with historical illustrations and references to authorities). By T. M. MAGUIRE, M.A., LL.D. Inns of Court Volunteers. London: Gale and Polden, 1895.

A very useful handbook for the student of Hamley, or rather of strategy, according to Hamley and his school. Unfortunately, since Hamley first wrote, a new school of strategists has arisen, which takes very little account of the conditions which in Hamley's mind were all important. This school numbers Moltke amongst its principal members, and he defined his position very distinctly in the history of the Franco-German War, in the following words: "It is only the layman who believes that he can trace throughout the course of a campaign the prosecution of an original plan"; and Napoleon himself, whose campaigns Hamley has so ably elucidated, was evidently of very much the same opinion, for on one occasion, being asked what his plan of campaign had been, he replied, somewhat

contemptuously, "*Plan de campagne? je n'ait jamais eu un plan de campagne.*" Strategy, literally interpreted, means nothing more or less than the art of the leader; and art cannot be taught, though the principles which rule in its execution may. These principles are almost all based on a correct appreciation of human nature, which cannot be learnt in the schoolroom, and indeed never is learnt in life, except by a few very highly-gifted individuals. Strategy, as hitherto taught in our schools, rests primarily on a false basis. It is always assumed that great results have followed, because at the moment of collision the opposing forces confronted each other under certain conditions of alignment of front relative to their bases, assuming always that the two forces were equal in fighting efficiency.

Actually, of course, no two armies were ever precisely equal in this particular point; generally events have proved them to have been very different indeed, and the consequences of collision have depended on this inequality. Take almost any situation in military history, and imagine that the beaten force had in fact fought hardest and won; where then would have been the advantage of their strategic ability? A few cases may be quoted to illustrate this point. Imagine Napoleon defeated at Jena by the Prussians: bad as were the consequences of defeat to the latter in fact, they would have been as nothing to the wreck of the Napoleonic Army which must have ensued; or Marengo, had the Austrians won. To the Austrians defeat entailed surrender; annihilation was the least it would have involved for the French.

The more one studies the problem, the more clearly does the absolute truth of Clausewitz's saying stand out: "In war everything is simple, but to secure simplicity is difficult"; which means, mass every available man and horse by the simplest possible means against the enemy, fight him and beat him if you can, then stick to his heels and destroy him root and branch, in the sure and confident hope—founded on the facts of human nature—that the moral effect of this one victory will be more far reaching than a dozen successful minor engagements, and therefore more conducive to the attainment of the ultimate purpose of all legitimate warfare—the conclusion of an honourable peace. Clausewitz's comments on the campaign of 1815 contain the whole matter in a nutshell.

This is all the ordinary soldier needs to know. The dodges by which, when two forces are very evenly matched, one commander obtains an advantage over another need not trouble him, they are mostly very simple in their nature; but the point when to employ them successfully is one that can only be settled by the leader himself, and on the basis of his knowledge of the nature of the troops he commands. Strategy which may be perfectly feasible to an army of brave men in the highest training, would be absolutely suicidal to a beaten force; what is of infinitely more importance to the student to know is the reasons why one force failed to fight hardest, not the strategic relation of the opposing fronts to one another.

The above is in no way meant as a reflection on Dr. Maguire's work. On the contrary, within the limits prescribed for him by the conditions his pupils have to satisfy, no better work could be done, and by introducing to his readers the names of such writers as von der Goltz and Lewal, he has, at least, indicated to his readers in what direction to pursue their studies when once free to follow the bent of their own inclinations.

The Officers' Note-Book. By Captain Sir HENRY S. RAWLINSON, Coldstream Guards. London: Edward Stanford, 1895. Price, 5s. 6d.

A strongly-bound little book of convenient size. The facts therein, compiled from recognised authorities, should be found very useful by regimental and staff officers. In any future edition of this book, and for the benefit of any other officers engaged on similar work, we would venture to recommend the use of untearable bank post paper. These books have to stand rough usage, and a very little rain or a chance immersion renders them merely pulp.

Horses, Saddles and Bridles. By Captain W. H. CARTER, 6th Cavalry, and Instructor to the Cavalry Department, Cavalry and Infantry School, Fort Leavenworth, Kansas. London: B. F. Stevens, 4, Trafalgar Square.

This work, though primarily adapted to the needs of the American Service, contains much which will be welcomed by British cavalry officers, for within a comparatively small number of pages the author has brought together all the essential facts connected with saddlery and bitting throughout the world—facts which otherwise are only to be obtained by prolonged research and comparison in many different languages and works.

The cavalry of the United States may be numerically weak, but there can be no question as to the very high degree of excellence they have attained, having due regard to the special conditions of their employment; and since our own cavalry are frequently at work under very similar ones, a careful study of the means by which their efficiency is obtained cannot be too strongly recommended. At the same time the book requires to be read with caution, for as the Americans are essentially a practical race, less attention is paid by them to the breaking and schooling of young horses than is advisable in cavalries where absolute precision in manœuvre and cohesion in the charge form the chief reason for their existence.

In the chapter on the selection of remounts, the following excellent common-sense remark should be noticed:—"Some horses apparently sound and without vice or fault, will still be far from desirable cavalry horses; a rough animal passed into the ranks will cause more discontent than he is worth."

Under the heading "Age of Horses" some interesting facts are recorded. The oldest horse of which the author had personal knowledge is "Belle Mosby," who went through the whole Civil War, and is still living at the age of thirty-five. A Mexican Army mule, which died in 1866, could be traced back over forty years.

The chapter on the "Endurance of Horses" is of exceptional interest, giving many details of the waste of horses during the Civil War, and the steps taken to remount the Army during its continuance; the organisation of the "Cavalry Bureau," on which this duty fell, should be carefully studied. The daily waste of horses throughout the year 1863-4 was 500, *i.e.*, the rate was approximately ·5 per cent.; this is heavy, but compares very favourably with many European experiences, notably with the French Grand Army in the march to Moscow.

Seats, saddles and bits are all treated with clearness and practical knowledge. Though the author's remarks contain nothing which in principle, at least, is not embodied in our own regulations, his views are stated in such a manner that the reason "why" is in all cases made sufficiently clear. This is a point in which "regulations" necessarily fail, and hence in the absence of properly qualified teachers, bad habits are apt to arise, which appear to be in accordance with the letter of the regulation, but are in reality entirely opposed to its spirit. To detect these mistakes and correct a long-established practice is often the most difficult task for a young officer thrown on his own resources; and a more valuable guide to enable him to train his judgment to act on his own responsibility in these circumstances, it would be very difficult to discover.

Taktische Entschlüsse und Befehle. Study of the Operations of an Independent Division. By Captain BUDDECKE. Berlin: Mittler und Sohn, 1895. Price, 2s. 8d.

This study is based on a scheme given at the Prussian Staff College, worked out and amplified by its author, who seems to possess in a very high degree the qualifications necessary in a tactical instructor. To quote his own words in his preface: "The solution of a tactical problem calls for the exercise of all a man's qualities, insight and circumspection, practical common sense and imagination, patience, foresight, and daring, an eye for country and a memory, judgment and the power of resolution." The whole character, the whole individuality of a man is expressed in his view of such a matter. A doubting habit of mind will take

refuge in the defensive, a sanguine nature dash light-heartedly into the offensive. And, since this is the case, the most marked differences of opinion are to be expected in the solutions, and a teacher would but ill fulfil his purpose if he failed to make the necessary allowances for different characteristics in his pupil's work, and attempted to override by sheer force of authority the expression of his pupil's opinion evolved in obedience to the scheme set before him.

"Sympathy is the quality most needed to overcome this kind of friction; without it no teacher can accomplish anything.

"The post of tactical instructor is therefore a difficult one. The man who simply crams his pupils with the drybones of drill and regulations for field service turns out only pedants; whilst the enthusiast who gives reins to his fancy, and deals only with broad general questions, ignoring the limitations of time, space, and his materials, at most succeeds in evolving strategic *dilettanti,* the most dangerous men of all.

"The teacher must be a psychologist, a reader of men's souls, studying the individuality of each, and thinking his way into their minds to find out their limitations and as far as possible correct them."

No truer words could be written; but the authorities, if they wish to get a good return for their money, must on their part provide an adequate number of men for the task, and not break down a willing horse by overloading him with more pupils than his mind can fairly be expected to grapple with.

Transactions of the East of Scotland Tactical Society for 1894-95. Edinburgh: Gordon Wilson, 47, Thistle Street. 1895.

The index of this excellent number, printed below, affords the best indication of its value. It is most encouraging to find how the interest in all naval and military matters is now spreading and we hope the time is not far distant when all the numerous tactical societies now in existence will publish their proceedings in similar form.

Lectures, etc.—Outdoor Tactical Exercise. "The Battle of Gravelotte, and some Tactical deductions therefrom," by Captain R. N. Gamble, Lincolnshire Regiment, A.D.C. "Savage Warfare," illustrated mainly from Photographs of Sketches made by the Lecturer in the Campaign in the Eastern Soudan, 1885, by Captain C. P. Lynden-Bell, East Surrey Regiment, Adjutant 4th V.B.R.S. Discussion on "The Report of the Select Committee of the House of Commons on the Volunteer Acts, 1894," opened by Colonel J. B. Sutherland, *V.D.*, Q.R.V.B., R.S., the Society's representative. "Outposts," by Colonel A. G. Wauchope, C.B., C.M.G., Commanding 2nd Bn. The Black Watch. "Hong-Kong to Japan in a Gun-boat," by Major H. P. Knight, R.E. "Battle Training of the Three Arms, with some Tactical deductions from recent Campaigns as to the effect of Modern Improvements in Military Material," by Captain R. N. Gamble, A.D.C. "Coast Defence," by Captain Norris, R.E. "The Strategy and Tactics of the Korean War," by Vice-Admiral P. H. Colomb. Discussion: Has Scotland an Efficient Volunteer Medical Force?" opened by George Mackay, M.D., F.R.C.S.E., Surgeon-Captain 1st Midlothian Volunteer Artillery. War Games, etc.—Minor Games. Edinburgh *v.* Dundee. City Members *v.* Country Members. East of Scotland Tactical Society *v.* West of Scotland Tactical Society. North of the Forth *v.* South of the Forth. Appendix—Excerpt from Statement by the Secretary of State for War, in submitting Army Estimates to the House of Commons, 15th March, 1895.

Thirty Years of Shikar. By Sir EDWARD BRADDON, K.C.M.G. London: William Blackwood and Sons.

To all interested in Shikar, or, in other words, to most Englishmen, Sir E. Braddon's book will prove decidedly good reading. A keen pig-sticker, an enthusiastic tiger-slayer, and a deadly snipe shot, Sir E. Braddon has enjoyed

every phase of sport in a country where opportunities for the sportsman are neither few nor far between. Nor does Sir E. Braddon confine himself to sport alone. He tells us also much that is interesting of the social and official conditions prevailing both as regards Europeans and natives. He gives his readers a graphic description of the causes which led up to and events which occurred during the now almost forgotten Santhal rebellion. Interesting mutiny reminiscences are also recounted, and "Thirty Years' Life as an Indian Official" would, perhaps, have been a more fitting title for the work. One delusion of our earlier days is rudely shattered by Sir Edward Braddon. We had thought the elephant to be amongst the bravest, most sagacious, and most loyal of the brute creation. Sir Edward deems him cowardly, stupid, and untrustworthy. In conclusion, there is a note of depreciation of the native running throughout the book which we regret. If the views held of native character were put forward by a callow subaltern of a British regiment, they would be immaterial; but coming from an official of the standing and service of the writer, they are harmful. An experience of some years in many parts of India compels us to disagree with them. No notice of the work would be complete without alluding to the exquisite little engravings scattered throughout. They are by Mr. G. D. Giles, who handles his pencil with as much skill as he used a boar spear in bygone days at Jacobabad and Siki, and we can give them no higher praise. Mr. Giles can paint the wily *dukka* as well as the Sind Horse subaltern used to spear him. H. L. S.

English Seamen in the Sixteenth Century. Lectures delivered at Oxford by JAMES ANTHONY FROUDE. London: Longmans, Green and Co. Price, 10s. 6d.

A ray of sunlight is not in itself a very beautiful thing. Indeed, under certain circumstances, it is possible to have too much of it; but pass the ray through a crystal prism, and in a moment one obtains a brilliant band of colour, in which the æsthete may delight, and the student find revealed the secrets of the uttermost bounds of the universe. As daylight is to the spectrum, so are the cold bald facts of the record offices, etc., to the broad stream of human interest that is refracted through the brain of an historian like Froude. Every historian will not refract his array of facts with the same accuracy, neither does every prism. Quality, the cutting of the facets, all may influence the result, and these have their counterpart in the limitations of the human organ. Equally so every student cannot read all that is revealed in the spectrum, but it is safe to say that in proportion to the knowledge of human nature and the insight into the motives which sway the actions of men on the one side, and to the accuracy of his previous scientific training on the other, so will be the result of the study each devotes to his special department. These observations are offered to explain the value we attach to the works of Mr. Froude, in spite of the charges of inaccuracy which have been brought against him. Admitting even all that his worst detractors have urged, the broad fact must still remain that in his works, and especially in the one now before us, he presents us with a picture of our ancestors, and of the motives which guided them, that no Englishman can afford to neglect, even though individuals may cavil at the details. If our forefathers were not all that he paints them, then they ought to have been; and in so far as this book may induce their descendants to eschew their faults and to emulate their greatness, its readers may well afford to overlook its blemishes. The nation will derive far more advantage from it than from all the dry-as-dust records that have been, or may be hereafter published.

Memories of Seven Campaigns: A Record of Thirty Years' Service in the Indian Medical Department in India, China, Egypt and the Soudan. By J. H. THORNTON, C.B., and Deputy Surgeon-General, Indian Medical Service (Retired). Westminster: Archibald Constable, 1895. Price, 17s. 6d.

An interesting record of thirty-five years of very varied experience which may be warmly recommended to the general public, who still remain far too ignorant

of the nature of our Indian duties, and of the hardship and danger to individuals entailed in the maintenance of our rule. It would be of great advantage if in future editions the author could supply appendices showing the diminution in the annual death-rate that has been effected by the spread of sanitary science, and perhaps add to them some estimate of the enormous saving resulting therefrom, both in human life and expenditure to the Empire. The Indian Medical Service needs no better justification of its existence than these figures would reveal.

The Japan-China War on the Regent's Sword, Kinchow, Port Arthur, and Talienwan. Compiled from official and other sources by JUKICHI INOUYE. Kelly and Walsh: Yokohama, Hong-Kong, Shanghai, and Singapore.

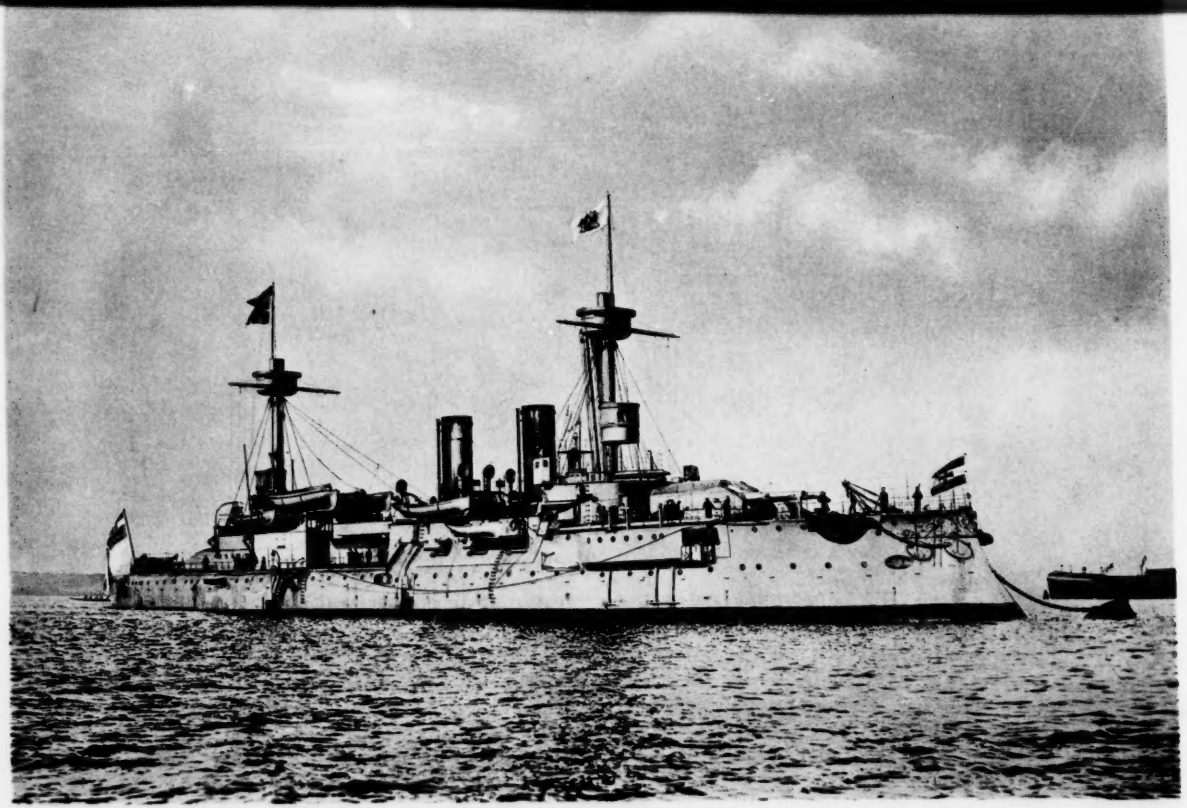
This book is admirably got up, with excellent collotype plates and maps. It has the advantage of being first in the field, and if that fact militates against a critical appreciation in respect of accuracy, etc., the enterprise of both authors and publishers deserves full recognition.

A Dictionary of English and French Military Terms. By ALBERT BARRÈRE, Professor of French at the R.M.A., Woolwich (in two parts). Hachette: London and Paris, 1895. Price, 3s. 4d.

This little book, bound in convenient form, should prove very useful to students of both nations.

The Lancashire Fusiliers' Annual, 1894. – This book, compiled and edited by Captain B. Smyth, lately quartermaster in the regiment, and now quartermaster and adjutant of the Hibernian School, is a good specimen of the regimental annual which has made its appearance in recent years. In addition to general notes, it contains information, interesting not only to the Line and Militia, but to the Volunteer battalions of the regiment, and excellent portraits of Lord Mark Kerr and Colonel Goldsmith. The printing and publishing have been executed by the 1st Battalion, and in a manner which reflect the highest credit on the printer, Lance-Corporal L. Tomkins.

Rifle Brigade Chronicle, 1894.—This is the fifth annual publication, compiled and edited by Major Willoughby Verner. It contains what practically amounts to the life of the four battalions of the brigade for the year, besides other matters of interest. The illustrations are good, and the publication is one which every regiment in the Service having no magazine might with advantage imitate.



J. J. K. & Co., LONDON.

For Particulars, see Naval Notes, page 847.

The German First Class Battle-ship "BRANDENBURG," 10,000 Tons, 9,640 I.H.P.